

PART II

CLINICAL GYNECOLOGY

VISIT...

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I- Gynecologic history taking

Introduction:

Probably in no other branch of medicine is an accurate history essential for diagnosis more than in gynecology. If an accurate gynecological history is taken, a large number of gynecological affections can be suspected and in some cases diagnosed from the history alone. Time spent on the patient's history is never wasted.

Medical students may not have the clinical knowledge to know what questions to ask. With time and experience they will be able to click on the patient's response and generate a list of additional appropriate questions. They will undoubtedly forget to ask certain questions, requiring a return visit to the patient's bedside to ask. They should not worry, this happens to everyone! They will get more efficient with practice. The history should be taken systematically and questions should be asked according to strict routine. Unless every point in the history is investigated, errors in the diagnosis will be made.

History taking includes the following items:

- 1- Personal and husband histories.
- 2- Complaint(s).
- 3- Menstrual history.
- 4- Obstetric history.
- 5- Past history.
- 6- Family history.
- 7- Sexual history (in cases of infertility, sexual dysfunction and sexually related genital infections).
- 8- Present illness and review of the symptoms.

Personal history:

• Name:

• Age: identifying the age in gynecology is important for the following reasons:

- 1- Categorize the patient in a certain period in the female life; childhood, adolescence, reproductive period, premenopause, menopause, and postmenopause.
- 2- Some gynecologic diseases are common in certain age periods e.g. endometrial and vulval carcinomas usually occur in older age groups
- 3- The etiology of many gynecological symptoms differs greatly in certain age groups e.g. the cause of abnormal uterine bleeding is commonly dysfunctional in adolescence and perimenopausal periods and almost due to complications related to pregnancy, labour, and puerperia in the childbearing period.

4- The age is sometimes a decisive factor in the choice of the line of management e.g. while hysterectomy is a usual line of management in endometrial hyperplasia in postmenopausal women, it is the last resort in management of this condition in patient in the reproductive period.

- **Residence:** certain parasitic diseases e.g. bilharziasis is endemic in rural than urban areas. Certain sexually transmitted diseases; e.g. AIDS can be contracted during residence abroad. The residence (address, phone number, e-mail, ... etc.) is also important to contact the patient for follow up.

- **Occupation:** some jobs expose the patient to various hazards (infections, anesthetic drugs, ionizing radiation, insecticides, heavy metals, ...etc.) which may predispose to infertility or recurrent reproductive wastage.

- **Marital status, duration of marriage and number & sex of living children:**

Ask the patient about:

- 1- The present marital status and whether she is married or single (virgin, widowed or divorced). Many gynecologic surgical procedures differ according to the marital status such as in management of pelvic relaxation.

- 2- Duration of marriage and previous marriages should also be recorded. The length of time a patient has been married is important when correlated with the number of pregnancies she had, to indicate her fertility. If the patient married more than once, mention the duration and outcome of each marriage.

- 3- There is a strong correlation between the marital status and subsequent childbirth with many gynecological conditions, e.g. fibromyoma of the uterus, pelvic endometriosis, and cancer of the body of the uterus are common in low fertility patients. On the other hand, genital prolapse, tears and ectopy of the cervix, and cancer cervix are more commonly seen in multiparous women.

- 4- Number of living children: the presence of desired number of living children may affect selection of the surgical procedure in certain diseases e.g. hysterectomy versus myomectomy in treatment of uterine fibroid.

- **Special habits:** excessive smoking, alcoholism and addiction have an adverse effect on reproductive function. Strenuous exercise may lead to menstrual dysfunction.

- **Personal history of the husband:** Name, age, occupation, marital status, residence, special habits and previous medical history and therapies. The husband's history explores the patient personal environment and is important in dealing with some gynecologic problems such as genital infections, sexual dysfunction and infertility.

Complaint (s): entails the symptom(s) which troubles the patient most.

The complaint and its duration should be written as *short, simple statements in the patient's own words*. If there are many complaints they should be written in a *chronological order*.

The gynecological symptoms are few (does not exceed the count of fingers), and include:

- ❖ Vaginal bleeding
- ❖ Pain related to gynecologic disorders
- ❖ Mass (abdomen, vagina, breast)
- ❖ Discharge (vaginal or breast)
- ❖ Other complaints:
 - Inability to conceive
 - Pruritus
 - Urinary symptoms
 - Gastrointestinal symptoms

N.B. A common occurrence is the concealment of the real complaint. A patient suffering from dyspareunia or infertility may come complaining of dysmenorrhea or some other symptoms in the hope that the doctor will by direct questions give her an opportunity to express the real complaint as she was too shy to state at the start of interview.

Menstrual history:

Details of the menstrual function are important for the diagnosis of many gynecological conditions. Menstrual history entails asking the patient about *the following items in sequence*.

- 1- **Menarche:** It is the last of pubertal events. It is defined as the age of the onset of the first menstrual flow. In Egypt, it varies between 11-14 years. Delayed onset of menstruation may be due to:
 - Genital hypoplasia or congenital uterine anomalies.
 - Hypothalamo-pituitary ovarian axis and/or thyroid dysfunction.
 - Chronic debilitating diseases and chronic ill-health.
- 2- **Cycle rhythm:** Regular or irregular. Patients may say they menstruate "twice a month" when periods begin on the second and twenty-eighth day of the same month (a 26-day cycle). Some say they menstruate every three weeks when they mean that they are free from bleeding for three weeks. The regularity of menstrual rhythm is an ovarian function.
- 3- **Cycle length:** It is the duration from the 1st day of one cycle to the 1st day of the next cycle. The normal cycle length ranges from 21 to 35 days.
- 4- **Duration of menstrual flow:** The normal duration of menstrual flow ranges from 2 to 7 days.
- 5- **Character of flow (amount, color, and odor):** Normally, these show wide variation from one patient to another and so what is considered normal for one patient, may be too much for the second and little for the third. The amount is considered normal if the patient

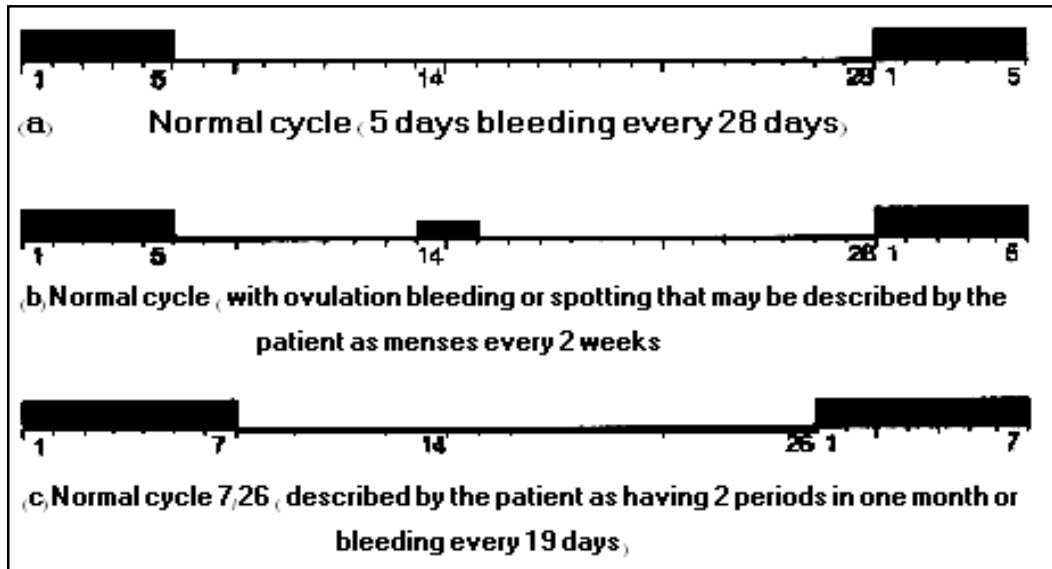
mentioned that it is of average amount. Excessive menstrual flow may be indicated by presence of blood clots, the number of sanitary pads or tampons used, the bright red color and interference with daily activities. Excessive menstrual flow may indicate the presence of a general disease e.g. anemia or local disease e.g. fibromyomata. Scanty menstrual flow may be indicated by its dark brownish color (coffee-ground) and minimal number and soaking of the sanitary napkins used.

No characteristic odor of menstrual flow, however the odor is considered abnormal if the patient reported so.

- 6- **Dysmenorrhea:** It is a pain related to menses which is severe enough to interrupt the woman from doing her usual daily duties. The character of pain, the time of onset and its relation to the age of menarche and its relation to days of the menstrual flow all help in identifying the type of dysmenorrhea. Congestive dysmenorrhea may indicate presence of local lesion in a good number of cases e.g. endometriosis, fibroid, ovarian tumours, etc. Menstrual molimina and symptoms of premenstrual tension should be delineated in association with this item.
- 7- **The intermenstrual pain, bleeding or discharge:** The intermenstrual period (IMP) is the period from the last day of menstrual flow to the 1st day of the next flow. During this period, many females experience increase in the normal vaginal discharge, sometimes spotting and adnexal pain (ovulation bleeding and pain). Failure to relate symptoms to the time in the menstrual cycle, especially in adolescent and young females explains why corpus luteum haematoma, ectopic pregnancy and endometriosis are misdiagnosed as appendicitis.
- 8- **The date of the last menstrual period:** You should ask about the nature of this last period regarding the amount, duration, character of blood loss and whether it was at the expected time or not. Knowledge of the date of the first day of the last menstrual period is vital from the standpoints of many gynecologic investigatory and therapeutic procedures.
- 9- **The contraceptive history:** It is mentioned here if it is currently used. You should ask about the type of the contraceptive method and the duration of its use.

N.B.1: The menstrual formula is recorded in three columns: the first is the age of menarche, the second is the length of the cycle and the third is the duration of the period (menstrual flow). In a female who had her first period at 12 years, who gets her periods every 28 days, and whose periods last for 5 days, the menstrual formula would be **(12 / 28 / 5)**.

N.B.2: The following diagram shows you examples of misinterpretation of the menstrual cycle that should be in mind during menstrual history taking.



N.B.3: The following abnormalities of menstruation should be in mind when you are taking the menstrual history.

- ❖ **Eumenorrhoea:** Normal menstrual flow.
- ❖ **Hypomenorrhoea:** Scanty menstrual flow.
- ❖ **Hypermenorrhoea:** Excessive menstrual flow & sometimes also prolonged (menorrhagia).
- ❖ **Oligomenorrhoea:** Infrequent periods, every > 35 days.
- ❖ **Polymenorrhoea:** Frequent periods, e.g. every < 21 days.
- ❖ **Menostaxis:** Prolonged periods, e.g. for 10 days every month with average menstrual flow.
- ❖ **Metrostaxis:** Irregular or acyclic bleeding (Bleeding not related to the periods). Also called (metrorrhagia).

N.B.4: If the patient is postmenopausal, no need mention of detailed menstrual history and instead mention only since how long the patient is postmenopausal

Obstetric history:

The obstetric history is fundamental because childbirth and its sequelae have a correlation with many gynecological disorders, e.g. rapid successive vaginal deliveries may predispose to pelvic organ prolapse, stress incontinence, perineal and cervical lacerations, ...etc. On the other hand, low parity and infertility are usually associated with uterine fibroids, endometriosis, endometrial carcinoma, breast fibroadenosis,etc.

The items of obstetric history: see history taking in obstetrics

N.B.: The obstetric formula is recorded in 4 columns; the first is gravidity; the second is parity; the third is the number of abortions and the fourth is the number of living children. Accordingly, a patient with 6 pregnancies including two abortions; one ectopic pregnancy; one full term normal delivery at 38 weeks; one twin delivery at 36 weeks and one CS at 40 weeks has the following obstetric formula (6 / 3 / 2 / 4).

Past history:

- 1- **Past medical history:** start by asking the patient about childhood diseases e.g. rheumatic fever, mumps & rubella and then adult chronic medical diseases such as diabetes mellitus, hypertension & cardiovascular diseases, tuberculosis, asthmatic bronchitis, hepatitis, nephritis and endemic diseases as bilharziasis.
 - Report the medical care of each problem and whether it was provided on a regular or episodic basis.
 - Report any adverse reactions to medications and their intensity e.g. allergic reactions can be mild as rash or life threatening as anaphylaxis.
 - Report any previous gynecologic medical or hormonal therapy (the drugs, duration of the therapy and response to treatment).
- 2- **Past surgical history:** it includes history of surgical or gynecological operations. Report the date and nature of the operation and if there were any complications. The type of anesthesia and blood transfusions should also be reported. If they do not know the name of the operation, determine at least why it was performed.
- 3- **Past contraception history:** is important and should be reported if not currently used. The methods, duration of use and if there is any adverse reactions or complications are recorded.

Family history:

- Family history of heritable diseases among the first or second degree relatives (parents, grandparents and siblings) as hypertension, diabetes mellitus, breast and genital cancer.
- Family history of non heritable diseases as T.B
- Family history of similar condition in the family.

Sexual history:

The sexual history represents an uncomfortable line of questions for many physicians and patients due to religious, moral and ethical considerations. However, sexual history is important in the following conditions:

- a- Sexual dysfunction.
- b- Sexually transmitted infections.
- c- Failure to achieve conception.

The sexual history include the following items:

- 1- **Libido (sexual desire or appetite):** is defined as interest in sexual activity sufficient enough to initiate it.
- 2- **Coital frequency:** The frequency of coitus may decrease significantly without substantial decrease in libido. The normal frequency during youth and adulthood is every other day or 2-3 times/week. It usually decreases to once per week in the 5th and 6th decades of life and lastly it decreases materially after the age of 60 years.
Too infrequent coitus may lead to infertility and too frequent coitus on a daily basis or more tends to lower the sperm count and diminish fertility.
- 3- **Coital position:** the dorsal position with the male superior is probably the most popular position. It is optimal for conception because it allows downward tilting of the vagina, direct insemination of the posterior vaginal fornix and cervix and deep penetration of the vagina. Whatever the coital position attained it should allow proper cervical insemination without discomfort or pain.
- 4- **Dyspareunia and vaginismus:** Pain during or with attempted coitus is a common complaint specially in adolescence and postmenopausal women. It can be superficial (introital) or deep.
Vaginismus is persistent involuntary and recurrent spasm of the musculature of the lower third of the vagina at intercourse.
- 5- **Orgasm (climax):** is the pleasurable release of sexual tension during coitus. The climax in females is associated with rhythmic contractions of the pelvic floor muscles, musculature of the outer third of the vagina (orgasmic platform) and the uterus.
Anorgasmia (inhibited sex derive): means failure to achieve orgasm, however orgasm is not essential for conception.
 - i- **Flour seminis:** it is normal for some of the ejaculate to flow out of the vagina after intercourse and it does not decrease the chances of conception. Excessive leak of the semen after coitus and specially with the patient still recumbent is called Flour seminis.
- 6- **Vaginal lubricants and douching:** The intravaginal use of artificial lubricants sometimes lowers the chances of conception due to the weakly spermicidal nature of these preparations. Immediate douching following the intercourse is a faulty practice. Equally important is the frequent douching which may create an intravaginal environment that is hostile to sperm.

Present history:

Includes analysis of the chief symptom (s), entails patient's thoughts and feelings about the illness and define relevant relations to other systems.

The chief symptoms must be thoroughly analyzed and their relationship to each other must be defined. This allows obtaining a chronological account (sequence of events) of the illness from the first symptom to the date of examination.

For each symptom start with asking about:

- 1- **Onset:** whether is it sudden (acute) or gradual (insidious).
- 2- **Duration:** when a patient mention complaints of long standing duration (months or years), it is important to ask about any something new/different today compared with every other day when this problem has been present ? Does this relate to a gradual worsening of the symptom itself ? Has the patient developed a new perception of its relative importance ?
- 3- **Course:** whether it is progressive (the problem is getting worse), regressive (the problem is getting better), stationary (staying the same), or intermittent i.e. fluctuant or recurrent (the problem is changing and the rate of change).
- 4- **Location /or radiation:** is the symptom (e.g. pain) located in a specific site ? Has this changed over time ? If the symptom is not focal, does it radiate to another area of the body ?
- 5- **Associated symptoms:** describe any symptoms that have popped up nearly at the same time as the dominant complaint.
- 6- **Aggravating & relieving factors:** Factors that may worsen or ameliorate the symptoms should be reported.
- 7- **Previous consultations:** Investigations, therapeutic aids and hospitalizations concerning the chief symptom(s) should be reported.
- 8- **Content of subsequent questions:** Clinicians during obtaining the history should continually generate differential diagnosis in their minds, with the patient's answers directing the logical use of additional questions. These questions should consider:
 - 1- The probable cause of each symptom i.e. infection, neoplasm, ...etc.
 - 2- The important positives and negatives.
 - 3- The effect on the general health (fatigue, loss of weight, ...etc)
 - 4- The patient psychological reaction (anxiety, depression, fear,etc.) and observing how she relates her story as well as her non-verbal behavior.
- 9- **Review of other systems:** in gynecology, the systems which are in close relation to the genital tract are the urinary and GIT systems; so, symptoms related to these systems must be reviewed.

II- General examination

For the items of general examination , the reader is referred to the chapter of general examination in the obstetric section in which individual conditions are considered in detail. Here, only points of special importance in examination of gynecologic cases will be mentioned.

❖ Examples of abnormal gait in a gynecologic patient is encountered in patients with pelvic abscess and painful vulval lesions.

❖ Together with measuring the patient's height, body proportions should also be measured. The arm span is measured with the arms outstretched sideways and the palms facing the examiner. It is the distance between the tips of the middle fingers. Normally the height and the span are equal.

The distance between the occiput and coccyx (upper body measurement) equals that between the coccyx and floor (lower body measurement).

❖ The physical built is influenced by several factors such as:

- 1- Genetic, racial, and familial characteristics.
- 2- The nutritional status and chronic illness specially at young age.
- 3- Hormonal and endocrinological disorders.

•**Emaciation or cachexia (underweight):** In such cases, the skin is thrown into folds, eyes and cheeks are sunken and bones like zygoma and ribs become prominent. It is encountered in patients with long standing chronic infections, malignancy, diabetes mellitus, thyrotoxicosis and anorexia nervosa.

•**Obesity (overweight):** In obese females, the excess subcutaneous fat tends to deposit on the buttocks and thighs (gynecoid or pear-obesity); while in males or masculine females it deposits more on the trunk area (android or apple-obesity). Simple obesity constitutes the majority of cases and is commonly familial with also relative excessive food intake. It tends to be marked at puberty and with advance of age. Also obesity can be genetic (e.g. in Laurence-Moon-Biedl syndrome), hormonal (e.g. in Polycystic ovary syndrome) and drug induced (e.g. contraceptive pills and corticosteroids).

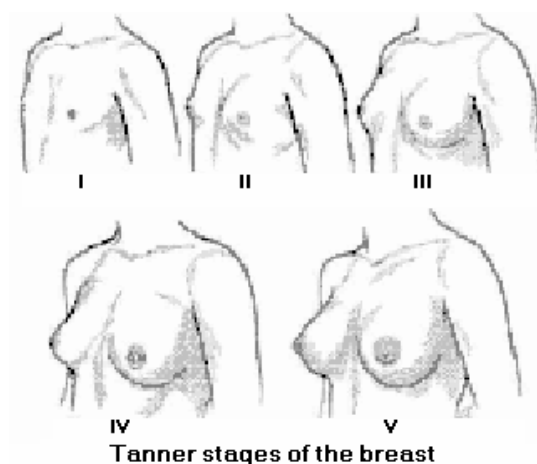
•**Dwarfism (stunted height):** Short stature commonly results from chronic illness in infancy and childhood (parasitic infestations, steatorrhea, Pott's disease, etc.). it can be genetic (e.g. Turner's syndrome) or hormonal (e.g. cretinism and pituitary dwarfism). When dwarfism is combined with lack of genital development the condition is known as infantilism (e.g. in Frolich's syndrome) in which the infantilism is combined with obesity and results from lesions involving the hypothalamic pituitary axis.

• **Gigantism (excessive height):** Long stature can be racial and familial, genetic (e.g. in Marfan's syndrome), hormonal (e.g. acromegaly) due to pituitary lesions with excessive secretion of growth hormone. Delayed union of the epiphysis (**Eunuchoidism**) causes excessive growth of the extremities with the **span** larger than the height and the **lower body measurement** is higher than the **upper body measurement**.

- ❖ Secondary sex characters such as voice, body configuration, pubic and axillary hair, abnormal hair distribution, breast development, etc. should be noted and recorded while you are proceeding for further steps in the examination. This is specially important in cases of abnormal pubertal development, amenorrhea and infertility.

Examination of the breast should include Tanner staging :

Tanner Stage	Description
Stage I	The "pre-adolescent" breast consists of a small elevated nipple (papilla) only, with no significant underlying breast tissue.
Stage II	There is an elevation of the breast and nipple as a small mound and the areola diameter may begin to enlarge. Milk ducts inside the breast begin to grow.
Stage III	There is further enlargement and elevation of the breast and areola (with no separation of their contours).
Stage IV	There is projection of the areola and papilla to form a secondary "mound on a mound" above level of breast.
Stage V	The breast has now fully developed and only the nipple still projects, the areola has recessed and become part of the general breast contour i.e. the secondary mound has disappeared.

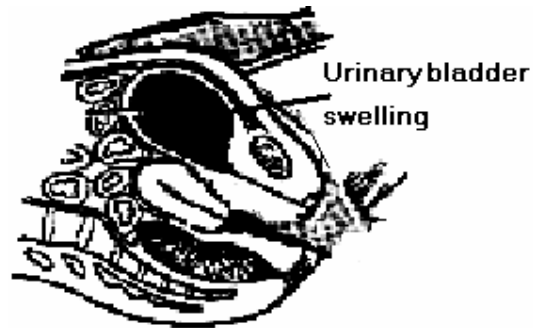


III- Abdominal examination

For the items of abdominal examination, the reader is referred to the chapter of abdominal examination in the obstetric section in which individual conditions are considered in detail. Here, only points of special importance in examination of gynecologic cases will be mentioned.

Characters of an enlarged urinary bladder:

- ❖ Ovoid smooth central mass arising from the pelvis
- ❖ Can extend above the umbilicus
- ❖ Non-mobile and dull to percussion
- ❖ Does not bulge into the pelvis
- ❖ Can not be felt on rectal examination



Characters of uterine swelling:

- ❖ A mass arising from the pelvis, usually central
- ❖ Mostly solid
- ❖ Symmetrical or asymmetrical
- ❖ Dull to percussion
- ❖ Mobile from side-to-side

Characters of ovarian swelling:

- ❖ A mass arising from the pelvis.
However, if it has long pedicle, it is felt purely abdominal. Also, on reaching the abdominal cavity, it tends to lie centrally. The illustration shows the relation between the site and size of ovarian swellings.
- ❖ Mostly cystic (80%)
- ❖ Mobile from side-to-side but not up and down
- ❖ Dull to percussion
- ❖ Palpable fluid thrill



- A** A small tumour lies to the side
B A medium sized tumour lies behind
C A small or medium sized tumour which lies in front is likely to have its pedicle twisted
D A large tumour lies above and in front of the uterus (central)

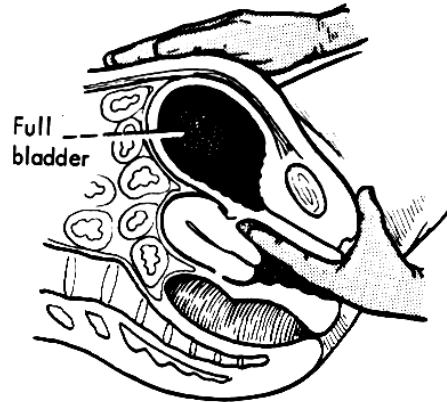
IV- Pelvic examination

Gynecologic assessment must be an integral part of every woman's general medical and physical examination.

Students should remember that an accurate pelvic examination depends upon a knowledge of anatomy and upon experience. Hence, students should never lose an opportunity of making a vaginal examination even in normal cases. It is impossible to acquire the technique of bimanual examination without practice, and much experience is required before gynecologic abnormalities can be detected with any accuracy. The more examinations a student makes the more confidence will he acquire as to his ability to elicit physical signs.

Preparation for the pelvic examination:

1. Have patient empty bladder and if possible the rectum. A full bladder intervenes between the examining hand and the uterus, which makes the identification of abnormalities extremely difficult. Furthermore, beginners may mistake the full bladder for an ovarian cyst.
2. Postpone routine (non urgent) pelvic examination if the patient is menstruating.
3. Have patient assume the lithotomy position (most popular) with feet comfortably placed in stirrups and hips abducted (make sure buttocks hang slightly over edge of the table). However, the modified Sim's and the full dorsal positions are also satisfactory for pelvic examination.
4. Drape the patient with sheet to form a tent over her knees and depress sheet between the knees so as to observe the patient's face during the examination
5. Warm gloved hands and speculum with warm water
6. Relaxation techniques are sometimes necessary
 - Pelvic examination is very difficult and uncomfortable in the anxious patient
 - Simple relaxation techniques (deep breathing/perineal relaxation) are helpful
 - Do not proceed with examination if patient is uncomfortable



Lithotomy position

7. Tell the patient what you are doing to her as you proceed with each portion of the examination.
8. The gloves and instruments, if not disposable, should be sterilized by autoclaving. Boiling offer inadequate protection against the risk of transferring infections, e.g. Trichomonas, Candida and chlamydial infections.
9. Have an assistant present in the room with necessary supplies: speculum, light source, cotton swabs, water-soluble lubricating jelly, and equipment for collecting indicated specimens.
10. Ensure adequate lighting.
11. The lubricant should not be greasy, the best is water soluble jelly or a cetrimide solution.
12. The examination should be made systematically and a strict routine should be followed if the examination to be complete. Failures to find physical signs in gynecology mostly result from incomplete examination.
 - a) Vulval and perineal inspection
 - b) Bartholin gland palpation, testing for prolapse and stress incontinence are then performed.
 - c) Vaginal palpation (P/V or per-vaginum examination) using either one or more commonly two fingers in the vagina for palpating the vaginal walls and the cervix. Always insert and withdraw the fingers gently and slowly.
 - d) Bimanual examination follows with the fingers still in the vaginal fornix and the other hand flat on the lower abdomen for examination of the uterus and adnexae.
 - e) Speculum examination follows bimanual examination, however, in certain circumstances it can precede vaginal palpation and bimanual examination, e.g. when cytology and vaginal discharge examination are to be performed.
 - f) Rectal examination is not routine but is recommended in children and adult virgins. In married women, it provides the best approach for palpation of the uterosacral ligaments, feeling the lateral parts of the parametrium and the pouch of Douglas. It can be combined with the abdominal hand to make it a bimanual procedure.
 - g) Combined rectal and vaginal examination has a special value in determining whether a lesion is situated within the bowel or between the bowel and the genital tract.

Examination of the vulva and perineum:

1. Inspect the following structures:

Inspect and palpate the mons pubis, labia majora and perineum. Separate the labia and inspect labia minora, clitoris, urethral meatus and vaginal opening or introitus.

a) Mon Pubis:

observe pubic hair distribution, inflammation, ulceration, swelling or nodules

b) Labia Majora and Minora:

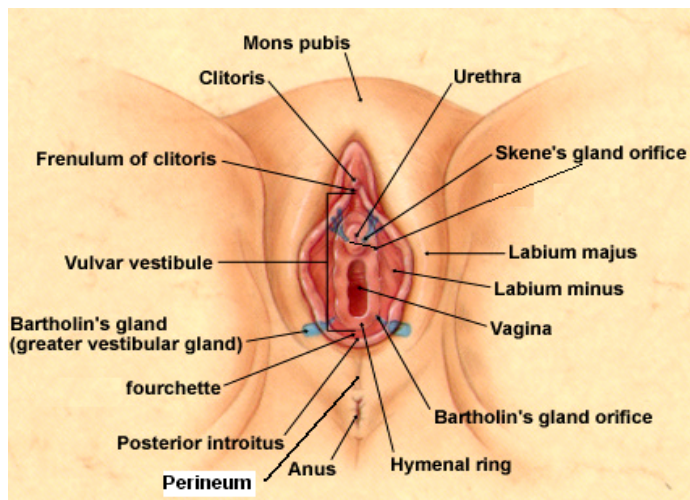
observe for pubic hair distribution (on labia majora) and for inflammation, ulceration, swelling or nodules

c) Clitoris: observe for masculinization ($> 2\text{cm}$). In uncircumcised female, the normal length of the clitoris is 1.5-2 cm, and if it is more than 2 cm, it denotes clitoridomegaly

d) Urethral Orifice: observe for discharge, urethral prolapse, caruncle

e) Introitus: observe for inflammation, ulcerations, nodules, previous episiotomy scar, hymenal status

f) Perineum and anus: for width, scars, hemorrhoids, etc.



Inspection of the vulval structures

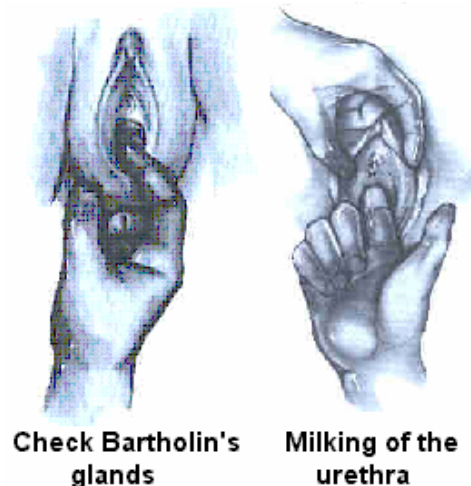
2. Palpate the following structures:

a) Inguinal area: palpate abnormal lymphadenopathy.

b) Labia Majora: palpate Bartholin glands which are best palpated with a gloved index finger in the introitus while the gloved thumb palpates externally. Normal Bartholin's glands are not palpable (pea size). If enlarged and palpable, causes may include a cyst, abscess, or adenocarcinoma.

c) Perineum/introitus: palpate perineal body thickness and vaginismus

d) Urethra: the urethral orifice is exposed by separating the labia and gently palpate (milk) the intravaginal portion of the urethra using the index finger



3. Examination for prolapse and stress incontinence:

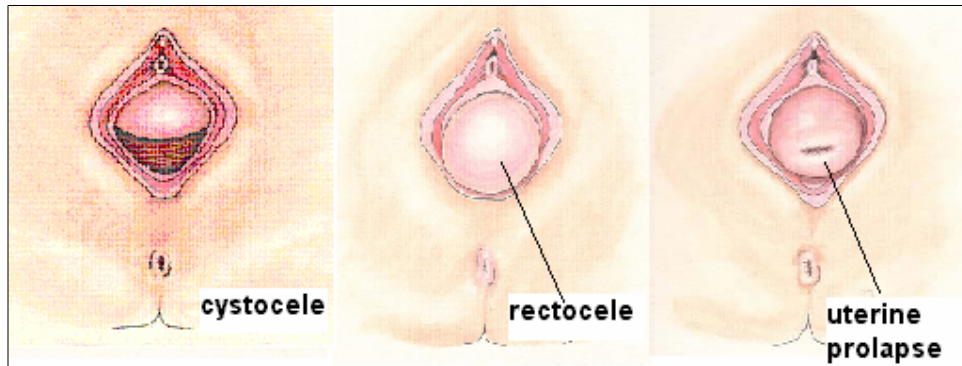
- a) Ask the patient to strain (like defecation) and/or cough while still separating the labia minorae and majorae
- b) Observe for signs of stress incontinence and/or abnormal bulging of anterior and/or posterior walls of vagina (sometimes helpful to use single speculum blade to displace opposite vaginal surface for optimal viewing).



Inspection of the anterior vaginal wall



Stress test in the lithotomy position



Palpation of the vagina and cervix:

- 1- Apply a small amount of the lubricant to the index and middle fingers of your gloved dominant hand. Abduct thumb and flex remaining digits.
- 2- Separate the labia with the index and middle fingers of the left hand and insert your lubricated index and middle fingers of the right hand edgewise into the vagina. Avoid rough contact with the anterior structures and then advance your fingers for about halfway the vagina and then they are turned 90 degree.
- 3- The following structures are palpated:



- a) Vaginal walls and fornices: anterior, posterior and lateral for rugae, tenderness, ulcerations, cysts, masses, scars or nodules.
- b) Then the portio-vaginalis of the cervix is palpated for shape, size, consistency, direction, level of the external os. Gently move the cervix side to side and forward to backward movements and observe for tenderness.

N.B. While the cervix is being examined, the patient should again be asked to strain down, and in this way any prolapse of the uterus can be recognized if the cervix descends below the ischial spine.

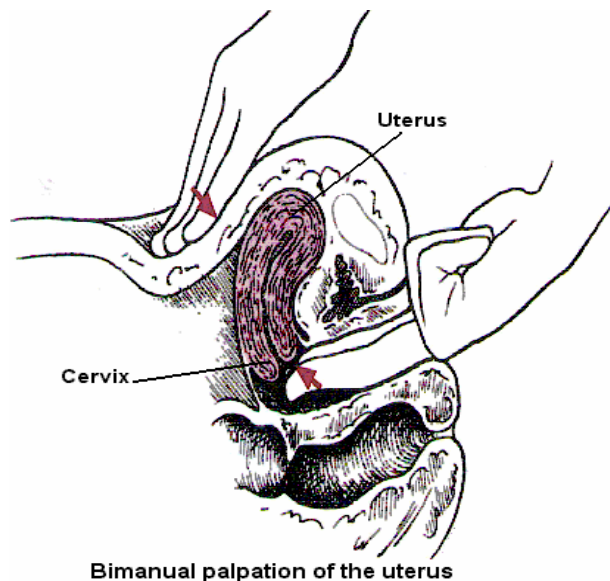
The normal vaginal walls are soft, warm with rugae in nulliparous and low parity patients. It is also not tender with the posterior vaginal fornix more deeper than the anterior fornix. The normal portio-vaginalis of the cervix is about 1.5 cm long, conical in shape with smooth surface, mobile, not tender on mobility, directed towards the posterior fornix. The external os is rounded or transverse slit and is at the level of the ischial spines.

Bimanual examination:

The bimanual examination forms the basis of all further investigations in gynaecology and, although further useful information may require radiological or ultrasound imaging, the bimanual examination alone often proves diagnostic. The examination is possibly one of the most intimate and hence potentially distressing and embarrassing that female patients undergo and therefore it must be approached with extreme care and sensitivity.

1- Palpation of the uterus:

- a) With the vaginal fingers in the anterior fornix, place abdominal hand midway between umbilicus and symphysis. Elevate the cervix with vaginal hand while pressing downward with abdominal hand. Gently try to grasp uterus between fingertips.
- b) Document the following normal findings:
 - 1) Size: should be about the size of a small orange or a closed fist.
 - 2) Shape: pyriform
 - 3) Position: anteverted anteflexed (80%)
 - 4) Contours: smooth and regular

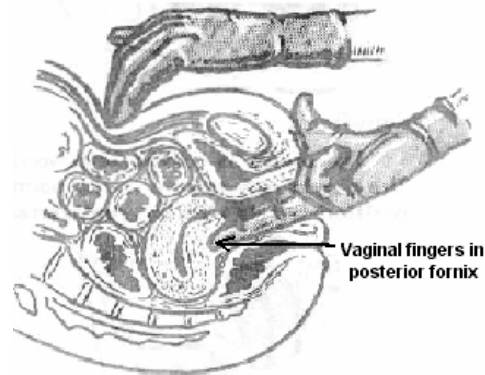


5) Consistency: firm

6) Mobility: mobile

7) Tenderness: not tender

In case of retroversion and retroflexion of the uterus (RVF) you may be unable to palpate the uterus with abdominal hand. Instead, the fundus can be palpated in the culdesac with the vaginal fingers in the posterior fornix.



Bimanual palpation of RVF uterus

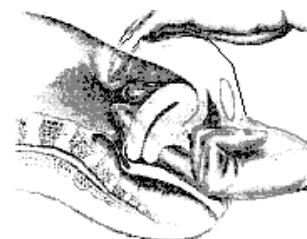
N.B. If the uterus is displaced to one or the other side by adhesions or a tumour, it may be necessary to move the abdominal hand to that side. In such cases it is particularly important to trace the swelling in the anterior and lateral fornices in order to be sure that it is in fact continuous with the cervix and that it moves with the cervix.

N.B. During bimanual examination, note that the thumb of the vaginal hand is deviated to one side to avoid pressure on the clitoris. Also the fourth and fifth digits of the examining hand are normally flexed on the palm

N.B. Beginners usually forget that most of the physical signs elicited by bimanual examination are detected with the external hand. A common error is for the fingers of the right hand to push upwards in the direction of the symphysis pubis rather than towards the lumbar vertebrae. Again, the pressure exerted by the left hand should be not only downwards but from behind forwards. A mistake which is frequently made is to place the left hand immediately above the symphysis pubis and simply to press downwards. The left hand should be placed on the abdomen well above the level of the symphysis pubis and fingers of the left hand should reach as far as possible before being drawn downwards and forwards to meet the uterus. The technique of bimanual examination is difficult to describe in words; experience alone teaches the method to be followed.

2- Palpation of the adnexae:

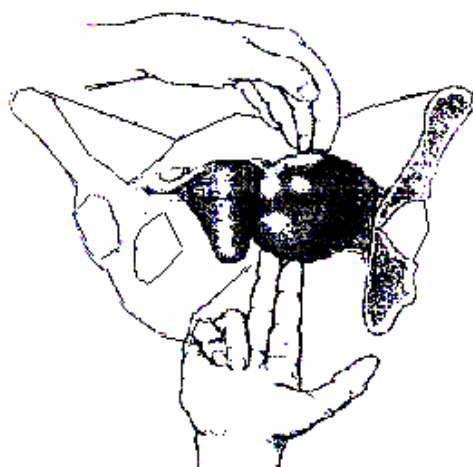
- a) Move the abdominal hand laterally to the iliac region and move vaginal fingers into lateral fornix. Attempt to entrap adnexal structures between fingertips. Repeat contralateral side.
- b) Note the following normal findings:
Normally, the adnexal structures are not palpable. Occasionally and in thin cooperative individuals, you may palpate the normal ovaries with its characteristics
 - 1) Ovarian size: normal ovaries 2x2 cms.
 - 2) Ovarian shape: almond shape
 - 3) Adnexal tenderness: slight tenderness (gives a sickening painful sensation)
 - 4) Adnexal mobility: very mobile



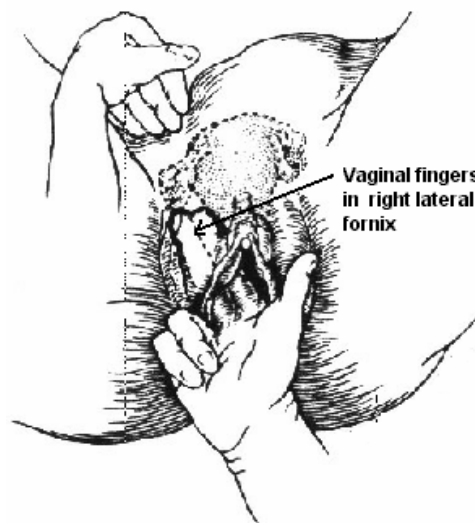
Fingers of both hands well above the position of the ovary



Ovary slipping between fingers of both hands

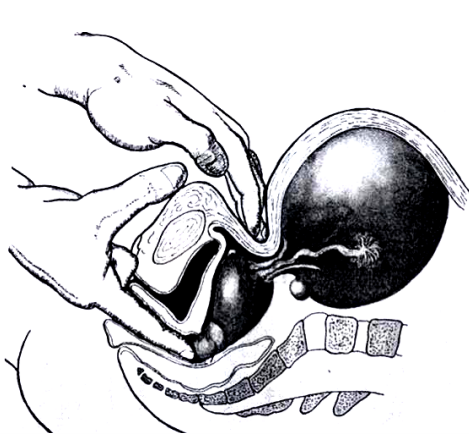


Bimanual examination of a case of pyosalpinx. Note displaced uterus and the fingers in the vagina moved to one side and feel the lower pole of the swelling

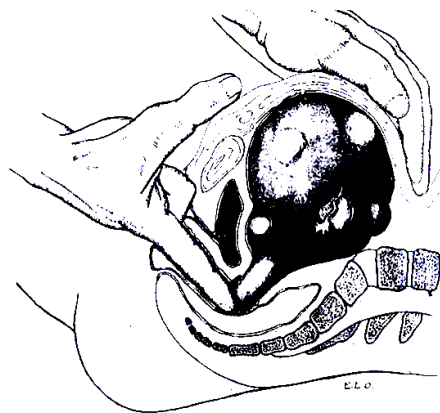


Palpation of the right adnexa

N.B. With some pelvic tumours there may be difficulty in deciding whether the tumour is the enlarged uterus or the swelling is an adnexal. The fundamental sign of an adnexal swelling is that it can be identified separate from the uterus and its movement is not transmitted to the cervix.



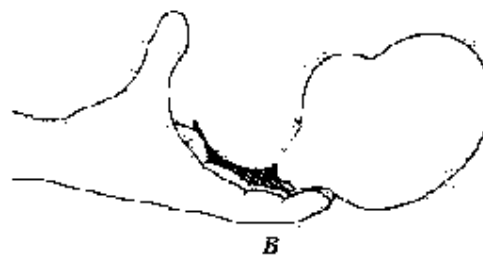
Bimanual examination of a case of ovarian cyst
Movement of the abdominal tumour is clearly not transmitted to the cervix



Bimanual examination of a case of multiple uterine fibroid. Movement of the swelling is clearly transmitted to the cervix



A



B

Distinguishing between a uterine and extra-uterine swelling by feeling a sulcus on vaginal examination. A- Sulcus present. B- No sulcus.

3- Palpation of the culdesac:

Palpate the culdesac by putting the vaginal fingers in the posterior vaginal fornix and the abdominal hand in the suprapubic region. No masses, nodules, thickening or tenderness are demonstrated in normal cases.

N.B. Swellings of the uterine adnexa tend to be prolapsed behind the uterus into the pouch of Douglas rather than to extend upwards. For this reason, the pouch of Douglas should be examined through the posterior fornix to detect the lower pole of the adnexal swelling.

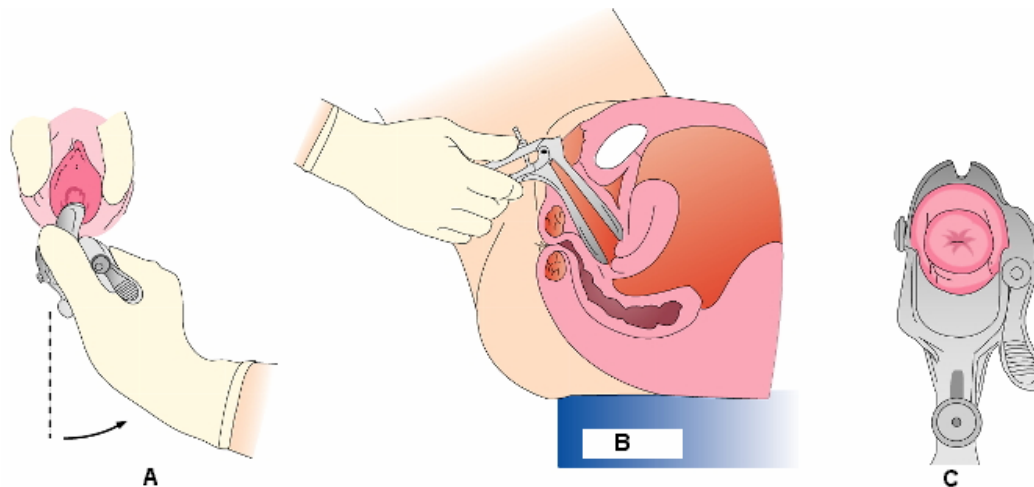
N.B. Swellings that can be felt through the posterior fornix are:

- 1- Collection of faeces in the sigmoid colon (commonest)
- 2- Retroflexed body of the uterus (next in order)
- 3- Pelvic abscess
- 4- Pelvic hematocele
- 5- Ovarian tumours
- 6- Adnexal inflammatory swellings
- 7 Diverticulitis

Speculum examination:

The best form of speculum to use is the self retaining bivalve speculum.

- Warm and lubricate the speculum with warm water
- Ask patient to spread knees laterally to relax perineal musculature
- Make sure that speculum blades are closed and thumbscrew loosened
- Expose the introitus by spreading the labia using the index and middle fingers of left hand



Technique for speculum examination of the vagina and cervix. (A) The labia are spread apart with a gloved left hand, while the speculum is grasped in the right hand and turned counterclockwise before being inserted into the vagina. Once the speculum is inserted, the blades are then spread apart (B) to reveal the cervical os (C).

- Insert the speculum edge wise at 45-degree angle antero-posteriorly pointing slightly downwards.

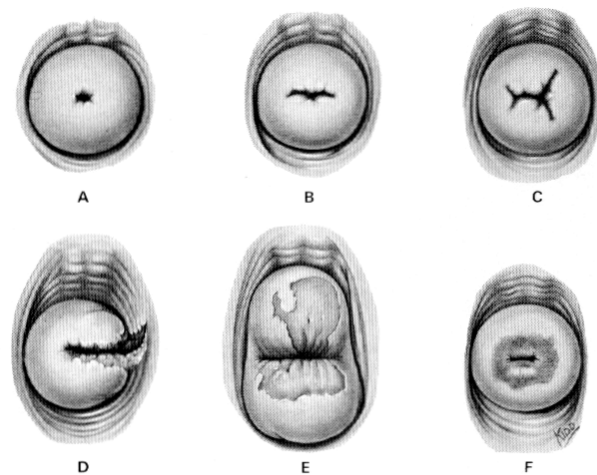
- avoid pinching vulva/introitus
- avoid sensitive urethra and anterior vaginal wall

- Advance the speculum gently till half way the vagina and then rotate to a horizontal position and continue insertion until the handle is almost flush with the perineum

- Gently open the blades of the speculum and position the blades by gentle movement until

the cervix "pop" into view and stabilize the speculum by tightening thumbscrew.

- Visualize cervix: Determine the color, size, shape of the external os (multiparous or nulliparous), and any abnormal cervical findings such as ulceration, polyps, eversion of the cervical lips (ectropion), discharge, contact bleeding etc.



(A) Normal nulliparous cervix. (B) Normal multiparous cervix. (C) Stellate laceration. (D) Lateral tear extending into vaginal fornix. (E) Ectropion of the cervix. (F) Erosion of the cervix.

- i. Obtain specimens for culture and cytology if it is indicated.
- j. Inspect vaginal mucosa
 - a) Loosen thumbscrew but keep speculum partially open during withdraw in order to inspect vaginal mucosa
 - b) Inspect for color, degrees of rugations (transverse ridges), malodorous discharge, strawberry spots, white patches, cysts, ulcers, nodules and fistulae

N.B. Every gynecological case in which digital examination of the vagina is possible should also have the vaginal walls and cervix examined through the speculum i.e. no gynecological examination is complete without speculum examination.

Rectal examination:

Indications:

- 1- Presence of rectal symptoms
- 2- Examination a recto-vaginal fistula
- 3- Examination of a virgin
- 4- Diagnosis of a rectocele or enterocele
- 5- Detection of infiltration of uterosacral and parametric ligaments
- 6- Diagnosis of a mass in Douglas pouch

The rectal examination is performed by the lubricated index finger of the right hand. Lightly touch the anus and wait for the reflex closure to relax and then gently insert the finger. Note the sphincter and any nodules or tenderness and then palpate the mucosa of the rectal wall in a circular fashion. Palpate the abdomen to identify rectal masses, recto-vaginal septum, culdesac masses, fundal and posterior uterine contour. Withdraw your finger and observe the glove for the presence of fresh blood or mucous.

Rectovaginal examination:

Indications:

- 1-Evaluation of the rectovaginal septum and rectovaginal fistula.
- 2-Evaluation of the enterocele (Malpas test) while the patient is standing.
- 3-Evaluation of the posterior wall of the uterus.

The rectovaginal examination is performed by introducing the index finger into the vagina and the lubricated middle finger of the same hand in the rectum and ask the patient to bear down. Sometimes you palpate the lower abdomen at the same time to identify the uterus and the adnexal areas as in the bimanual examination.



Rectovaginal examination

V- Investigations & special tests in gynecologic practice

General considerations:

The diagnosis of any disease commonly include the possible etiological factors, e.g. congenital, infectious, neoplastic,etc. (**etiological diagnosis**), the structures and/or organs involved (**anatomical diagnosis**), and the disturbed function, tissue reaction, pathological changes and/or damage (**pathogenesis and pathological diagnosis**).

Although the bedside clinical diagnosis is very important, the need for biochemist, pathologist, and radiologist should contribute valuable data towards confirming or reaching the diagnosis. They should be used to fill the gaps which remain after clinical assessment of the case. Also, they are important for the assessment of the general health, vital functions and operability risk of the patient. Before describing any investigations, the value of the data obtained should be weighed against the possible hazards.

Investigations can be arbitrarily classified into clinical, laboratory including the histopathological examination, radiological, imaging techniques, and endoscopic procedures.

A- Clinical investigations:

Mean those performed by the gynecologist himself alone, in conjunction with other technicians or with subsequent different requests. In some cases, the test is performed by the patient herself, e.g. basal body temperature chart test, pad test and urinary diary charts.

1- Uterine sound: measure the length

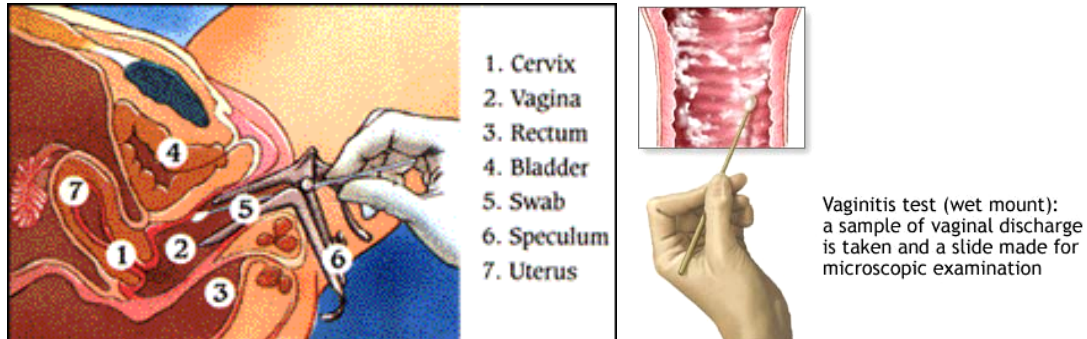
of the uterine cavity, identify the uterine position and its relation to ill defined pelvic or pelvi-abdominal swellings. However, it should not be a routine and is contraindicated in cases of evident genital tract infections, and in cases with soft uterine wall, e.g. complicated pregnancies

and malignancy. Whenever difficulty is encountered (e.g. cervical stenosis and/or intra-uterine synechiae), it should be omitted to avoid uterine perforation or false passage.

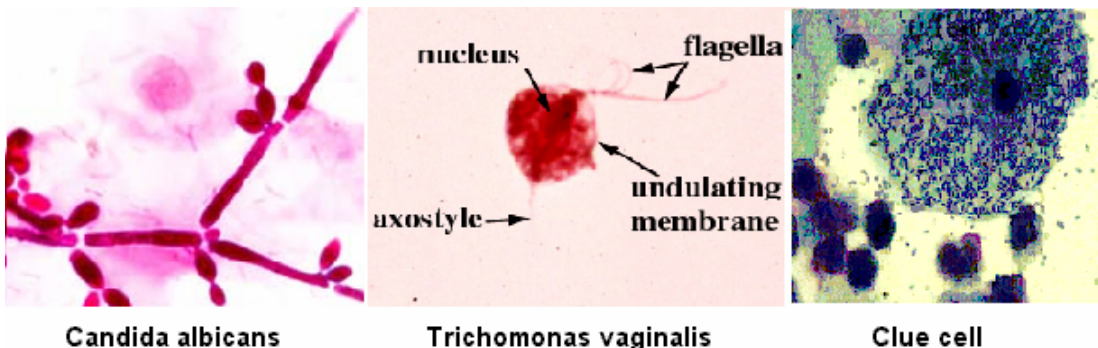


2- Microscopic examination of genital discharge:

Specimens uncontaminated by lubricant are obtained from the urethra, posterior vaginal fornix, or endocervix by swabs or pipettes and examined microscopically after mixing with saline solution on a warm slide covered with a glass slip.



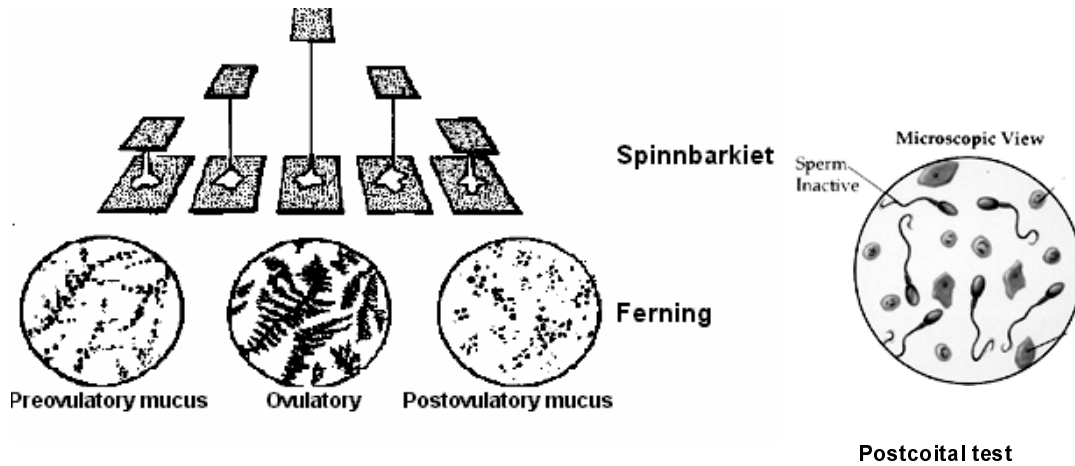
- The pH of the specimen as well as the discharge characters as regards the amount, consistency, color, odor, and associated pruritus should be assessed.
- Trichomonads are recognized by their shape, size (larger than a pus cell and smaller than a vaginal squames) and its rotatory movements with motile flagella.
- Candida are identified by the presence of mycelia and yeast cells. In the presence of large number of pus or white cells, a 10% hydroxide preparations dissolves the white and red cells and improves visualization.
- In cases with a pH > 4.5 and presence of more than 20% of clue cells (squamous vaginal epithelial cells covered with multiple bacteria giving them a stippled look with obscured borders), the diagnosis of bacterial vaginosis is attained.



N.B. In cases of unsatisfactory results, the swabs must be kept moistened with warm normal saline and transported to the laboratory for staining and cultures.

- Examination of the cervical mucus withdrawn by a pipette, nasal polyp forceps or tuberculin syringe for physical properties suggestive of ovulation and for the postcoital test (sperm-cervical mucus interaction) are simple clinical tests indicated in infertile couples. The cervical mucus prior to ovulation (pre ovulatory) is normally thin, clear,

abundant, and stretchable (Spinnbarkeit > 8-10 cm), with good tertiary ferning and low cellularity.



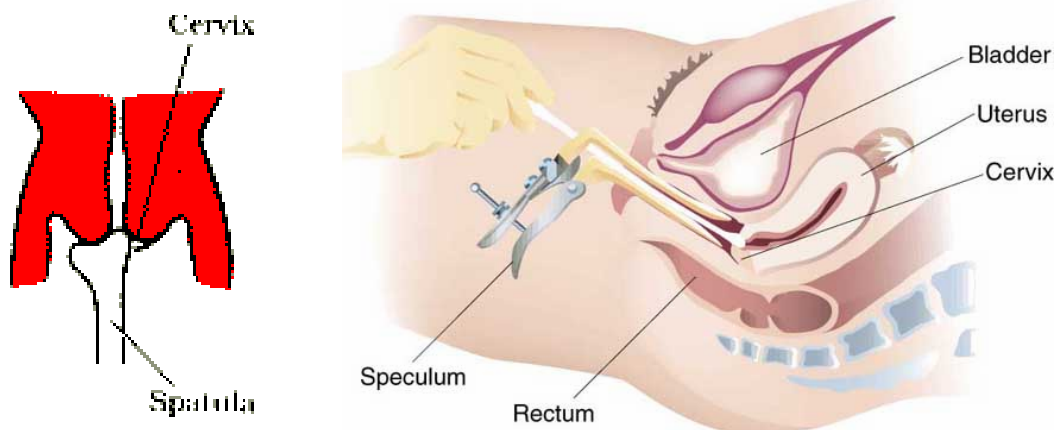
- In the postcoital test, examination is advised 2-8 hours after coitus; the presence of 10 -15 sperms in each high-power field that show a progressive and non rotatory activity is accepted as satisfactory test.

3- Cytology (vaginal, cervical, uterine and peritoneal):

is valuable whenever malignancy is suspected because early cancer is more amenable to cure than one which is discovered relatively late.

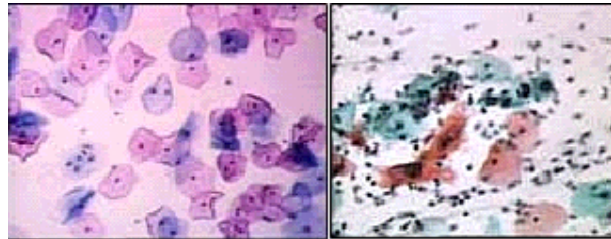
Cytodiagnosis depends on the fact that surface cells shed continually from the epithelium lining the genital tract. Basically cytology is not a method for diagnosing cancer, but a method of screening for sometimes symptom free, but high risk patients. The sure diagnosis is by histopathological examination of tissue.

❖Vaginal and cervical cytology:



- The specimen collected from the posterior vaginal fornix by a pipette or cervical scrape (using Ayre's spatula, extended tip plastic spatula or cervical cytobrush) to scrap the external cervical os and the squamocolumnar epithelial junction.

- The specimen is smeared on microscope slide and immediately fixed before drying by spraying with 90% alcohol with minimal amount of carbowax and glacial acetic acid. The slide dries in 5-10 minutes to leave the smear with a protective cover of wax. These are transferred to the laboratory to be stained by Papanicolaou technique.

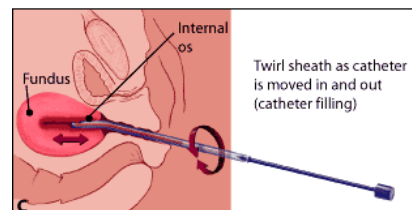
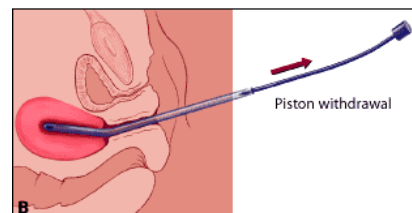
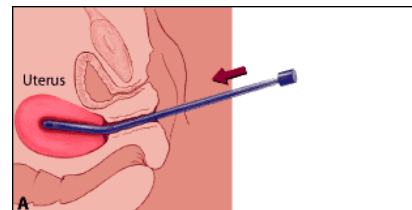


Healthy cervical cells

Abnormal cervical smear

❖ **Endometrial cytology:** Endometrial cytology via aspiration techniques using:

- 1- Vabra aspirator is a special narrow cannula curette which is inserted into the uterus and the endometrial tissue is extracted by electric suction.
- 2- Karmen type cannula, a 4 mm Karmen cannula to which is attached a 20 mm syringe.
- 3- Rotatory brushes: with endometrial lavage under negative pressure.
- 4- Catheter aspiration : see illustration



Since dilatation of the cervix is not required, it is performed as a procedure without anesthesia, or at most local paracervical block.

In all, the technique should be aseptic and is applied as an office procedure without the need for hospital admission.

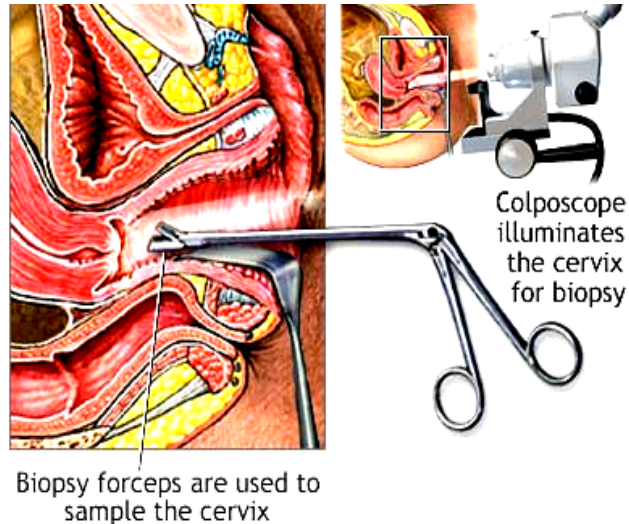
The specimen obtained should be submitted for histological and bacteriological examination.

- ❖ **Peritoneal cytology:** ovarian cancer could be suspected or diagnosed by detecting malignant cells in centrifuged washings with heparinized saline obtained from the pouch of Douglas, paracolic gutters and subdiaphragmatic space during laparotomy. Positive reports influence the staging and treatment.

4- **Colposcopy and colpomicroscopy (microscopy in vivo):**

are optical instruments with various magnifications (10-30 times with colposcopy and 100-300 times with colpomicroscopy) designed to examine the surface epithelium of the genital tract (vulva, vagina and cervix). During examination, areas with leukoplakia, and arrangement of surface capillaries are evaluated before applying acetic acid. Then 5% acetic acid are applied, in dysplastic epithelium, the excessive nucleoproteins are

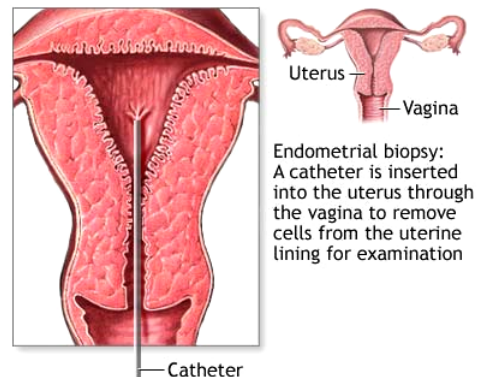
precipitated by acetic acid about 30 seconds after application to make these areas opaque compared with the normal epithelium (acetowhite epithelium). Terminal capillaries may surround the acetowhite areas giving the appearance of mosaic or within these areas giving the appearance of punctations. Biopsies should be taken from suspicious areas.



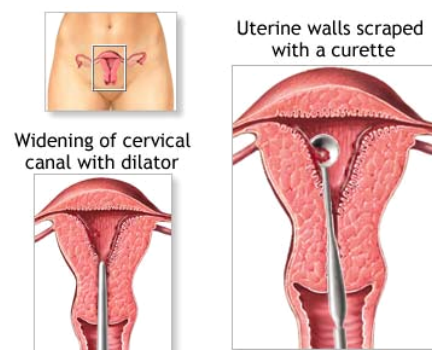
5- Tissue biopsies: provide tissue specimens for histopathological examination and hence the pathological diagnosis of lesions which is the most accurate and allow proper choice of management. In many cases, it is the only possible way to identify the nature of lesions.

❖ **Endometrium:**

1- **Endometrial biopsy (office curettage):** carried out as an office procedure without anesthesia using narrow biopsy curettes. This method is reserved for benign lesions of the endometrium.

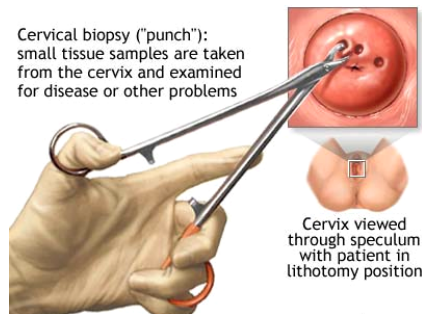


2- **Endometrial curettage:** it can be diagnostic as well as therapeutic, done in the operating theatre under general anesthesia. When malignancy is suspected on clinical grounds, fractional curettage in which the endocervical canal is curetted first before dilatation of the cervix is performed and the cervical sample is set aside for histopathological examination. Next, the procedure is carried out as usual with only one, two, or more uterine specimens with their assigned uterine sites.

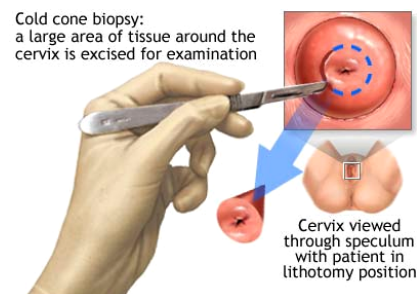


❖ Cervix:

1- **Punch biopsy:** Single or multiple are indicated for confirmation of the clinical diagnosis in cases of invasive cervical carcinoma and also in young women with low grade, small unifocal CIN lesion. In such case, it is usually performed under colposcopic guidance.

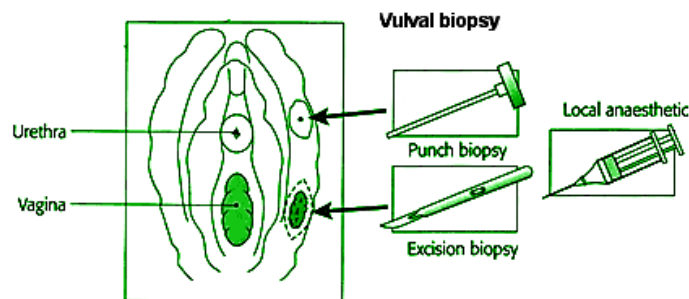


2- **Cone biopsy:** is indicated when the colposcopic area extends into the cervical canal and are not totally visible. The cone biopsy removes the whole of the squamocolumnar junction. The tissue obtained is divided into 12-16 segments and each one blocked and sectioned separately.



❖ Vulva and vagina:

Punch and excision biopsies can be performed for many lesions and specially in which the diagnosis can only be made by histological examination of the excised tissue, or when malignancy is suspected.



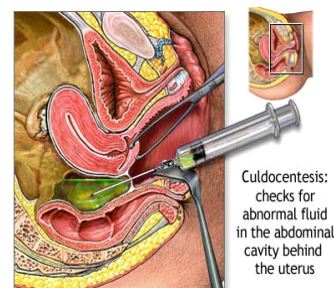
❖ Ovary:

Ovarian biopsies are indicated during laporotomy for ovarian cysts and tumours. Frozen sections are very valuable in such settings to identify the nature of the tumour, grading and best line of management.

Ovarian biopsies obtained via laparoscopy are sometimes indicated in cases of infertility for evaluation of the ovarian reserve and the diagnosis of streak gonads.

6- **Examination under anesthesia (EUA):**

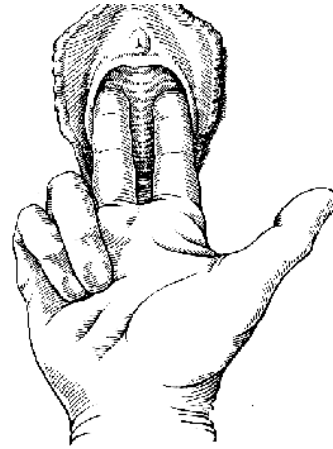
Sometimes indicated when pelvic examination is difficult or impossible, however, in certain cases it can be dangerous because the important sign of tenderness disappears (ectopic pregnancy). To obtain maximum information, additional measures are performed such as



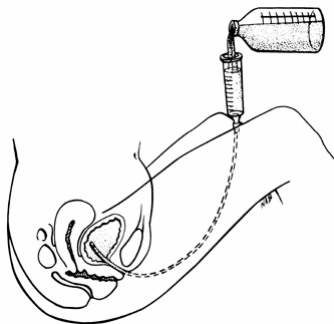
uterine sounding, endometrial sampling, culdocentesis (in which a thick-bore needle is used to aspirate the contents of the Douglas pouch in PID, or suspected disturbed ectopic pregnancy), culdotomy or hysteroscopy.

7- Clinical urodynamic tests:

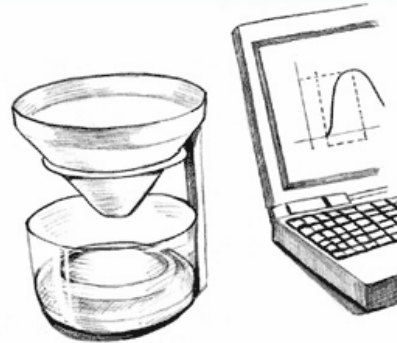
Because of the close embryological, anatomical and physiological relationship between the urological and genital tracts, lesions of either may affect both. Accordingly, basic clinical studies for urethral and bladder function in the female is a gynecologic concern. Urodynamic studies such as uroflowmetry, cystometry and urethral pressure profilometry are usually needed in cases of frequency, urgency, and voiding difficulties. In cases of stress incontinence, specially when associated with prolapse, Bonney's test, Youssef's test and the Q-tip test are significant. In cases of genito-urinary fistulae, the click test and the three-swap dye test are simple valuable tests.



Bonney's test



Office filling cystometry



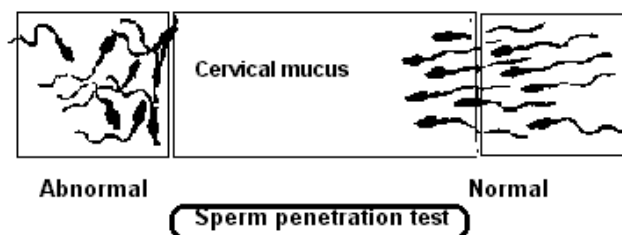
Uroflowmeter equipment

B- Laboratory investigations:

1- Biochemical estimations (whole blood, serum, urine): in concern with gynecology, it includes hormonal assays, tumour markers, immunological tests for specific genital and sexually transmitted infections, complete blood picture, blood coagulation profile, serum creatinine, blood sugar curves, liver and kidney function tests and urine analysis.

2- Culture media, bacteriological examinations and sensitivity tests: These tests are needed to identify the causative microorganisms in cases of genital tract infections.

3- Semen analysis and sperm-cervical mucous invasion investigations:



These tests are indicated in couples with infertility.

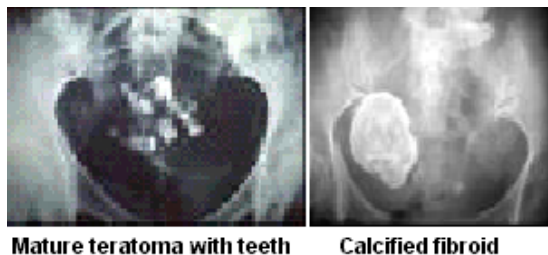
4- **Cytological and histopathological investigations:** these investigations are important in cases of abnormal uterine bleeding and epithelial inflammatory and neoplastic lesions.

5- **Other special investigations:** dealing with virological, immunological, cell mediators, chromosomal, DNA and gene studies may be needed in certain circumstances.

C- Radiological investigations:

1- **Plain X-ray:** plain X-ray of the skull (lateral view) in cases of primary amenorrhea with suspected pituitary adenomas or prolactinomas may show widening of the sella turcica (pituitary fossa). Plain X-ray of the pelvis may demonstrate the following:

- a) Calcareous degeneration in uterine leiomyomata.
- b) Ectodermal elements, such as teeth in benign ovarian teratomas.
- c) The radio-opaque shadows of missed IUDs.
- d) Bladder or ureteric calculi.

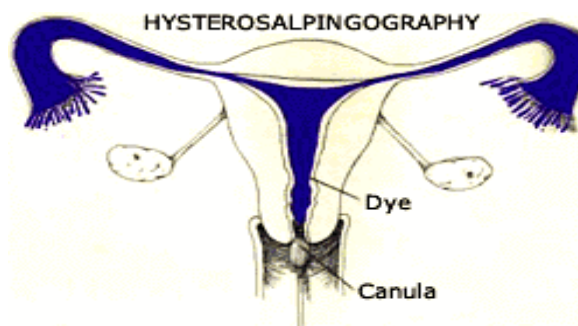


Mature teratoma with teeth

Calcified fibroid

2- **Hysterosalpingography (HSG):** Radiography of the interior of the uterus and fallopian tubes is useful in the diagnosis of uterine malformations, small intracavitary lesions, intrauterine synechiae and incompetent cervix. It is also useful for the diagnosis of T.B. salpingitis, hydrosalpinx and tubal obstruction.

It entails injecting 2-20 ml of a non irritant radioopaque solution through the cervix into the uterus and tubes, without anesthesia, in a radiological department. The flow through the



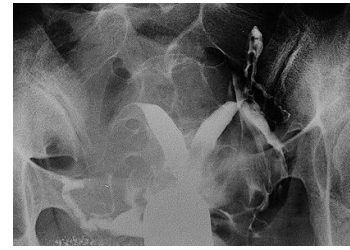
uterus and tubes is observed by screening, films being exposed at suitable intervals.

The water soluble media (as Hypaque 60) are the least dangerous but are quickly absorbed and of minimal value in diagnosing peritubal adhesions. Lipidol (an oily preparation) is better as regards this concern. Repeat or delayed film after 30 minutes with water soluble media or after 24 hours with oily media is taken to assess the peritoneal smearing of the dye. Loculation of the medium in the pelvis points to the possibility of peritubal adhesions.

Another alternative to the traditional HSG is the image intensified fluoroscopy which permits visualization of the passage of the contrast dye through the uterus and tubes in a controlled manner. The accuracy is increased and the total radiation exposure is limited to only 1-1.5 rads.



HSG (normal uterus)



HSG (Bicornuate uterus)

3- Fistulography or sinography: is an X-ray technique to demonstrate small fistulous tracks using either ureteric or small Foley's catheter to inject the radioopaque dye. The technique is a specially valuable for fistulae with an intervening abscess cavity. It can be used as an extension to colpography. If the fistula is communicating with a loop of bowel, its nature may become evident from the appearance of the mucous membranes and haustrations.

4- Intravenous pyelography (IVP):

- Provides measure for evaluation of the kidney function.
- It is recommended as a pre-operative investigation when the nature and extent of the pelvic pathology is uncertain. The bladder is sometimes displaced or indented in the presence of large fundal or anterior uterine wall fibromyomata. The ureters are displaced laterally by large masses filling the true pelvic cavity and are displaced medially and superiorly by broad ligament swellings extending to the pelvic side walls. Large pelvic masses may produce significant pressure and partial occlusion of the ureters at the pelvic brim or at some point during its retroperitoneal course within the pelvis leading to hydronephrotic and hydronephrotic changes.



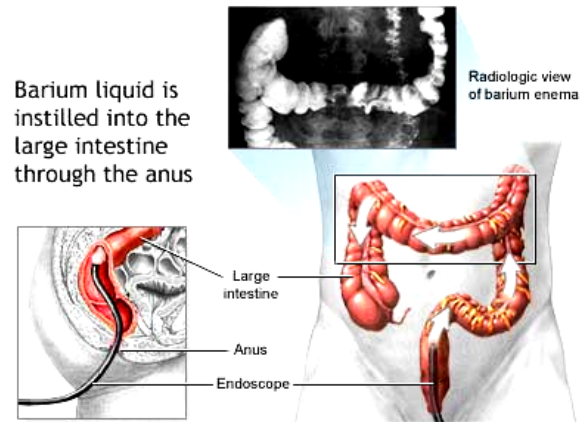
IVP, pelvic kidney

- It is also important in cases of congenital malformations of the genital tract which may be associated with congenital anomalies of urinary tract.

5- Lateral urethro-cystography (micturating cystogram): Radio opaque medium is introduced into the urinary bladder through urethral catheter and lateral radiographs

are taken at rest, under strain and with micturition. The technique is used to demonstrate the anatomy of the bladder and weakness of the internal urethral sphincter in cases of suspected or proven stress incontinence. This is manifested by disappearance of the posterior urethro-vesical angle on rest or straining. In normal individuals, this occurs only with voiding.

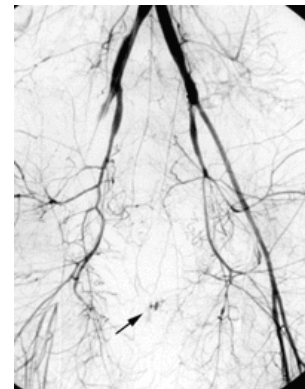
- 6- Barium enema:** Barium enema may be used as a pre-operative assessment when the nature and extent of pelvic pathology or tumours is uncertain. The sigmoid colon and rectum may be compressed or displaced by pelvic masses. Malignant pelvic lesions with direct extension to the lower bowel can result in their constriction or fistulous communication. Occasionally benign conditions such as pelvic endometriosis and extensive pelvic inflammatory disease may alter the configuration of the lower bowel significantly.



7- Pelvic angiography:

- a) Pelvic arteriography: was used in the diagnosis of invasive mole and choriocarcinoma of the uterus. Now, it is useful in elucidating obscure cases of menorrhagia and in managing some rare cases of arterio-venous malformation and pelvic varices.

The technique is performed under local anesthesia by femoral artery puncture and the threading of a catheter to a level of a common iliac or aortic bifurcation. The procedure can be done unilaterally or bilaterally. Serial films at intervals of approximately 1 second are taken in order to follow the movement of the dye bolus through the pelvic vasculature. As a rule, the entire course of the hypogastric vessels and its branches can be visualized.



Pelvic arteriogram

- b) Pelvic venography: is usually restricted to cases with deep pelvic vein thrombosis.

N.B. Because both techniques (the arteriography and venography) entails considerable radiation exposure, they are now largely replaced by the recent Color Doppler studies.

- 8- Lymphangiography:** is used in the evaluation of lymph node pathology within the pelvis and abdominal cavity. Radiopaque material is injected under pump infusion control through a lymphatic vessel identified in the webbed space between the toes on the dorsum of the foot. After allowing sufficient time for the movement of the

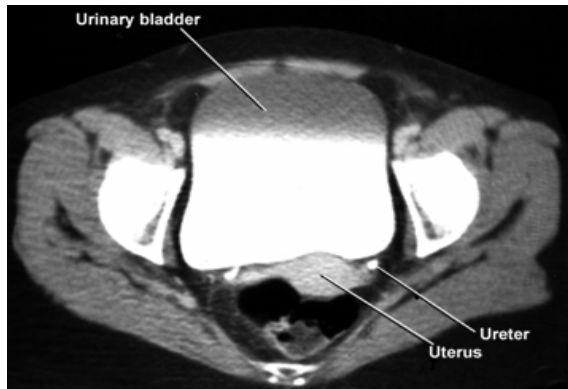
opaque dye through the lower extremity lymphatic vessels, standard X-ray plates of the pelvis, including lateral and oblique views, are obtained to outline lymph nodes and lymphatic channels. This procedure can be used in the staging of invasive cervical carcinoma and in localization of involved lymph nodes before radiation teletherapy. Lymphangiography can also provide useful information about the relative completeness of operative lymphadenectomy during radical surgery.

9- **Computed tomography (CT):** CT

scan of female pelvis starts at the level of the iliac crest and moves to the symphysis or ischial tuberosities.

It is useful for the evaluation of bladder and rectal masses, recurrence of carcinoma on the pelvic wall and for assessment of lymph node enlargement. In addition, the position

of the ureters in relation to a pelvic mass can be determined by CT scanning after the administration of intravenous contrast material.

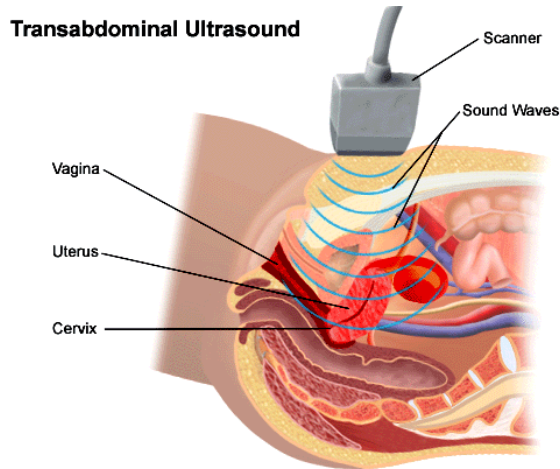


D- **Imaging techniques:**

1. **Ultrasonography (sonar):** the transabdominal approach (TAS) usually needs (3.5-5 MHz) probes and the transvaginal approach (TVS) usually needs (5.5-7.5 MHz) probes.

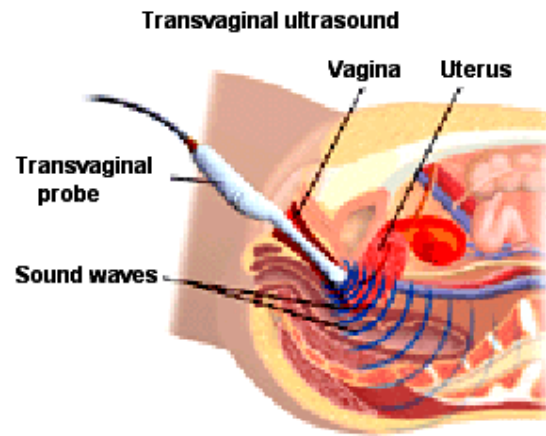
TAS: give a low-power view of the pelvic organs and has a value in the differential diagnosis of pelvic or pelviabdominal swellings, e.g. uterine leiomyomata, benign or malignant ovarian cysts and adnexal swellings.

TVS: an ultrasound probe is passed into the vagina which allows a more detailed view of the cervix ovaries and uterus and its contents. It has a value in ovulation monitoring (assessment of the follicle size), ovum pick-up in cases of IVF programs and for ultrasound guided biopsies and cyst aspirations. It is also beneficial for evaluation of endometrial thickness, endometrial lesions and assessing myometrial invasion by endometrial cancer.



Transrectal ultrasonography (TRS):

is of particular importance in evaluation of cervical lesions and assessment of parametrial extension in cases of carcinoma of the cervix. It is also useful in patients with vaginal stenosis in whom the TVS probe cannot be used.



Sonohystosalpingiography: is a technique that involves instillation of saline solution through a Foley catheter into the uterus and observing the fluid passing through the tubes and collected in the pouch of Douglas by transvaginal sonography. This technique can delineate endometrial polypi.

2. **Color Doppler:** It is a more sophisticated equipment using the doppler sound waves principle and is able to quantitate blood flow through the blood vessels, e.g. uterine artery, umbilical artery, fetal aorta,etc.



Transvaginal color doppler blood flow studies are useful in differentiation between benign and malignant genital tumours.

Colour doppler of mucinous cystadenocarcinoma

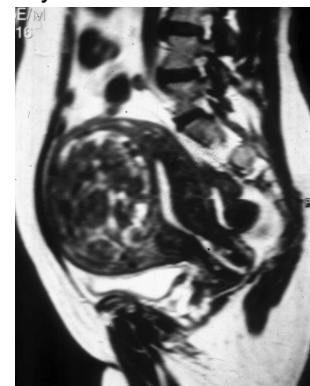
Malignant cell growth is accompanied by neovascularization (angiogenesis).

3. **Magnetic resonance imaging (MRI):**

The pelvis is particularly an ideal region for scanning by MRI due to the absence of respiratory movement and entrapment of soft tissue elements by fat and bone.

Tumours of the ovary, uterus, bladder, vagina and surrounding support structures are clearly shown. Extension of malignant or inflammatory processes is visualized and can be quantitated for purposes of clinical staging and measuring therapeutic response.

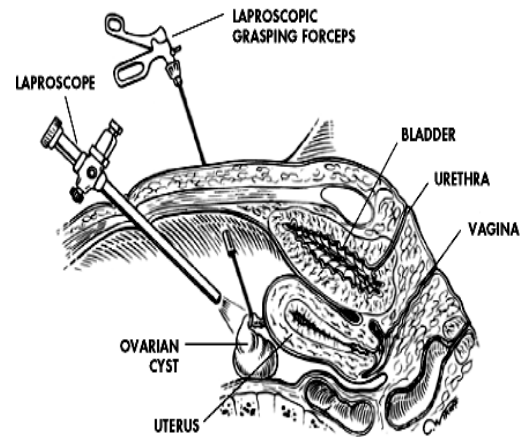
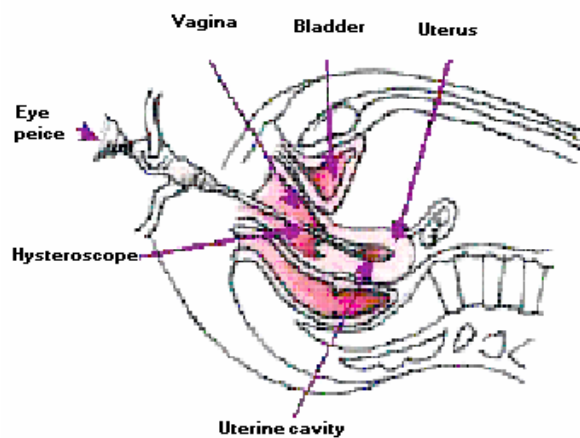
MRI has several advantages over CT scan as there is no radiation exposure, imaging is multiplanner (sagittal, oblique,etc.), contrast is not required and soft tissue contrast resolution is superior.



MRI of intramural fibroid

E- Endoscopic investigations:

The endoscopic investigations include hysteroscopy for the magnified viewing of the uterine cavity, culdoscopy and laparoscopy for the assessment of intrapelvic organ pathology and function. For details of technique, indications and contraindications, see your gynecology textbook.



VI- CLINICAL TIPS

PEDIATRIC GYNECOLOGIC EXAMINATION

Examination of neonates:

External genitalia: place the infant in the supine position with the thighs flexed against the abdomen. The labia majora appear thick and bulbous. A white vaginal discharge is usually present. A small amount of withdrawal bleeding may also be observed during the first few days of life. Evaluation of bleeding in the neonate is not necessary unless it is excessive or persists beyond 10 days of life. The clitoris often appears large in relation to the other genital structures. Testing for congenital adrenal hyperplasia should be initiated immediately when clitoromegaly is observed because a delay in diagnosis can lead to dehydration and death of the neonate. The vaginal orifice may be difficult to visualize in the newborn due to the redundancy of the hymenal tissue. To confirm patency, slight pressure may be applied to the vestibule, which will produce drops of mucus. If this is unsuccessful, the tip of a well-lubricated, soft rubber catheter may help in locating the orifice. Failure to locate an opening is suggestive of vaginal agenesis or an imperforate hymen.

Rectoabdominal examination: should be performed with the little finger to evaluate the newborn's uterus and ovaries and confirm patency of the anorectal canal.

Examination of pediatric patients:

The pelvic examination of the prepubertal child requires a gentle, patient approach.

To examine children younger than 4 years of age, place the child in the supine position with the hips fully abducted and the feet together in the "frog-leg" position. Alternatively, the child can be placed on the mother's lap with the child's legs straddling the mother's thighs. Children older than 4 years can easily use stirrups (lithotomy position).



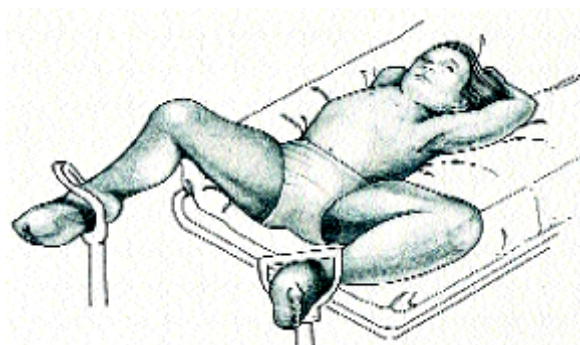
Frog-leg" position



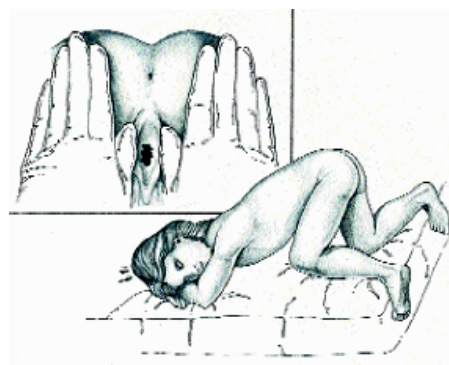
Straddling mother's thighs

The knee-chest position is important if sexual abuse is suspected because it exposes the most inferior portion of the hymen where injuries are most likely to occur.

To view the vaginal introitus, grasp the labia along the inferior portion between the thumb and index finger and gently pull outward and downward (labial traction). This technique is more effective in opening the vaginal introitus than labial separation alone.



Lithotomy position



Knee-chest position

In some cases, it may be necessary to separate the edges of the hymen with a moistened cotton-tipped swab or by spraying jets of water on the tissues.

Due to a lack of estrogen, the genitalia appear different during childhood (ages 4-7 years) compared with the neonatal period. The labia majora flatten out, and the labia minora become thinner. The vasculature of the mucosal surfaces is easily visualized. The unestrogenized hymenal membrane is flat and thin and can be easily lacerated. The vagina is 4-5 cm in length in the prepubertal child and has a thin, red epithelium that is very sensitive to touch. For this reason, it is necessary that cultures be obtained only with small, moistened, cotton-tipped swabs to minimize risk of trauma to the epithelium. Vaginal rugae are not present during this period of development, although longitudinal ridges on the mucosa are common.

After the neonatal period, the uterus regresses and does not again reach its natal size until approximately 5-6 years of age.

The young child's cervix is approximately twice as large as the fundus, but may be hard to visualize because it is flush with the vaginal vault.

The ovaries are located at the pelvic brim in the young child.

N.B. An examination under anesthesia involves looking very carefully at the genitals, including looking inside the vagina with a very small instrument called a vaginoscope. This instrument is like a small telescope, only 3mm in diameter, which allows us to look up inside the vagina without causing any stretching or tearing.

GYNECOLOGIC AND SURGICAL POSITIONS

Certain positions are mandatory to facilitate the examination, certain investigations, performing operation and post-operative care.

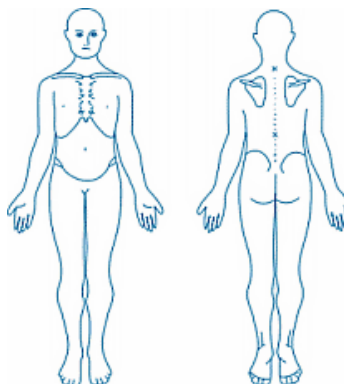
Positions are either standing, sitting or recumbent.

I) Standing positions:

1. Anatomical position:

For the purpose of universal comparison, there is a standard position - the anatomical position – that the patient theoretically has assumed. This allows consistent description of body parts in relation to each other.

- Standing upright with feet together
- Head and eyes looking forward
- Arms straight, adjacent to sides of body
- Palms facing forward and fingers extended



Anatomical position

2. Examination in the standing position:

- Historically during the Victorian prudery vaginal examination is done with the patient standing and dressed except the under wearing. The doctor sits beneath, ceremoniously posed and proceeded with the examination without laying eyes on the genitalia.
- Clinical examination for hernia of Douglas pouch
- Clinical examination of inguinal hernias
- Clinical examination for screening for scoliosis.

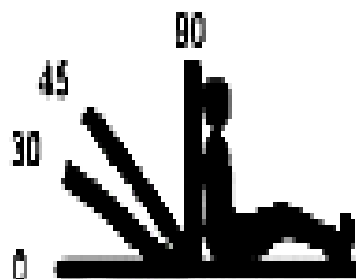


Historical vaginal examination

II) Sitting position or (Fowler's):

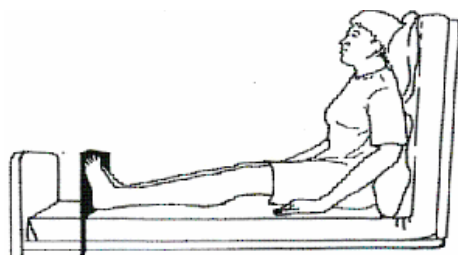
Sitting with back rest elevated and legs usually extended flat on the table, but the knees can be bent and is adjusted to the desired angle which should be:

- 1 - 60° - 90° angle for high Fowler
- 2 - 45-60° angle for Fowler
- 3 - 30 - 45° for semi-Fowler

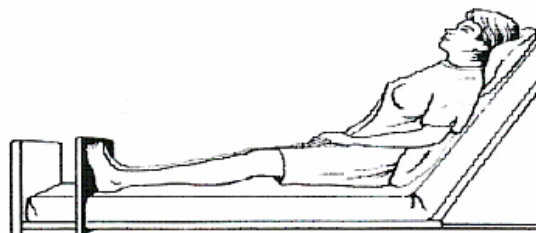


This position was first used by the English physician Charles White (1728 – 1813). He instituted the principle of uterine drainage, placing his patients in a sitting position shortly after delivery.

The position is suitable for examination of the head & neck, chest, heart and lower extremities. It is the position of comfort for respiratory functions.



High Fowler's position



Semi-Fowler's position

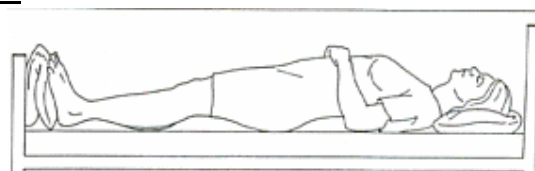
III) Recumbent positions:

1) Horizontal recumbent with the face up:

a. Full supine position:

is a horizontal recumbent position. The patient flat on the back, arms at the side, and legs together and extended.

It is used in abdominal operations



Full Supine Position

b. Dorsal supine position: in which one pillow is allowed under the head with flexion and abduction of the knees and feet flat on the examination couch. It is the most commonly employed for abdominal &

gynecological examination and the attendant either stands on the right side of the patient in case of ordinary examination couch, or in front of the patient in case of short couch with or without foot rests .



Dorsal supine position

c. Lithotomy position: Dorsal supine with the feet in stirrups. It is the most common position for pelvic examination and gynecologic vaginal operations and obstetric operations and maneuvers.



Lithotomy position

d. Steep Lithotomy or exaggerated Lithotomy position:

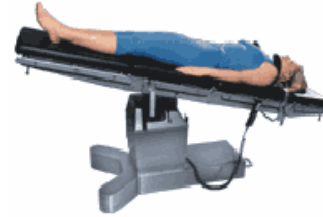
The patient is placed with her buttocks off the end of the operating table. Then the operating table is placed in 35-45 degrees head-down position. Shoulder supports for the table can be helpful in preventing the patient from sliding toward the head of the table. This position brings the anterior vaginal wall into view and allows excellent exposure for fistula repair.



Steep Lithotomy position

e. Trendelenburg position:

Position in which the patient is on an elevated and inclined plane, usually about 45°, with the head down and legs and feet over the edge of the table. It is used in abdominal operations to push abdominal organs towards the chest. This position is also usually used in treating shock, but if there is an associated head injury, the head should not be kept lower than the trunk.



Trendelenburg position

f. Anti-Trendelenburg position:

Patient is on an elevated and inclined plane, usually about 45° with the head up and legs and feet down.

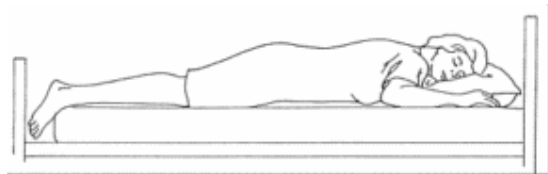


Anti- Trendelenburg position

2) Horizontal recumbent with the face down:

a. Prone position:

Used to examine spine and back and promotes drainage from mouth.. Patient lies on abdomen with head turned to one side for comfort. Arms may be above head or alongside body.



Prone Position

b. Knee – chest position:

A prone posture resting on the knees and upper part of the chest i.e. lying face down with knees and chest on table. It is assumed for gynecologic or rectal examination this position allows the vagina to balloon with air, and the intestine to fall away from the pelvis and allows food



Knee – chest position

inspection of the cervix and anterior vaginal wall. It was previously used for certain gynecologic procedures and operations e.g insertion of radium or cesium, repair of a vesico-vaginal fistula and culdoscopy

c. Jackknife position:

Some surgeons prefer this position for a fistula which is tucked up behind the urethra. The legs should be slightly flexed, and abducted and with the buttocks just over the end of the operating table. There must be an appropriate mattress (non-slip) and the shoulder pads must be correctly positioned and padded to prevent the patient slipping off the table and to prevent any unnecessary pressure on the neck or blood vessels when deep Trendelenburg is required.

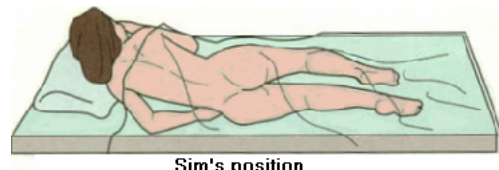


Jackknife position

3) Lateral recumbent positions (lying on one side of the body):

a. Sim's position (exaggerated left lateral position):

- Place a pillow under the patients head
- Flex and draw right knee close to the abdomen
- Flex left knee slightly
- Place the left arm behind the back
- Flex and place right arm in front of the patient.

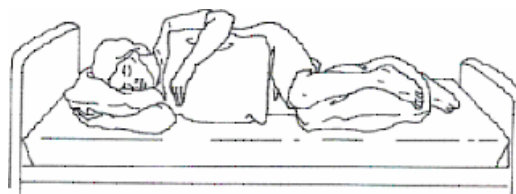


Sim's position

Is used for examination of genitourinary fistulae in conjunction with Sim's speculum
N.B. In the mid 1800's, Dr. Marion Sims developed this position for exposure of vesicovaginal fistulae. This was a critical break-through in technique, since a fistula that cannot be seen cannot be repaired

b. The conventional 90 - degree (modified Sim's)lateral position: it is commonly left

lateral with the legs are bent at the hips and knees. Here the left arm is bent in front of the patient side. It causes little embarrassment to the patient. It allows good inspection of the anus, perineum, posterior parts of the vulva, vagina and cervix.



Lateral (modified Sim's position

c. The 30 – degree lateral position (recovery position): It is the preferable position for unconscious non traumatized patient.



Recovery position

DIFFERENTIAL DIAGNOSIS OF GYNECOLOGIC COMPLAINTS

Pain of gynecological origin

A) Pelvic Pain:

Pelvic pain is a common complaint among women. Its nature and intensity may fluctuate, and its cause is often obscure. In some cases, no disease is evident. Pelvic pain can be categorized as either **acute**, meaning the pain is sudden and severe, or **chronic**, lasting over a period of months or longer. Pelvic pain may originate in genital or extragenital organs in and around the pelvis, or it may be psychological, which can make pain feel worse or actually cause a sensation of pain, when no physical problem is present.

In evaluating pelvic pain the present history should describe the following data:

- 1- Onset, course, duration, and recurrence.
- 2- Character or type of pain e.g. colic or cramping is often associated with muscular contraction or obstruction of a hollow viscus such as intestine or uterus.
- 3- Severity or intensity
- 4- Specific location : visceral pain is usually poorly localized (vague)
- 5- Referral of pain
- 6- Association with the menstrual cycle (timing and duration).
- 7- Associated symptoms: vaginal discharge, vaginal bleeding, GIT symptoms, etc.
- 8- Relation to body functions and activities such as eating, voiding, defecation, exercise, bending, stretching, sexual activity, etc.
- 9- Previous medical care and its effectiveness.

Acute pelvic pain:

- Acute pain is characterized by being intense, with sudden onset, progressive short course and is often associated with autonomic reflex responses such as nausea, vomiting, diaphoresis, apprehension or fainting.
- It is usually caused by acute infections, ischaemia, rupture or leak from cysts and obstruction of a hollow viscus
- Early diagnosis of acute pelvic pain is critical because delay can increase morbidity and mortality

Chronic pelvic pain:

- Chronic pelvic pain is pain of more than 6 months duration
- Patients with chronic pelvic pain are often anxious or depressed. The past social or psychological history should be properly evaluated with particular attention to marital and occupational conflicts, history of psychiatric therapy or hospitalizations ... etc.

Differential diagnosis of pelvic pain:

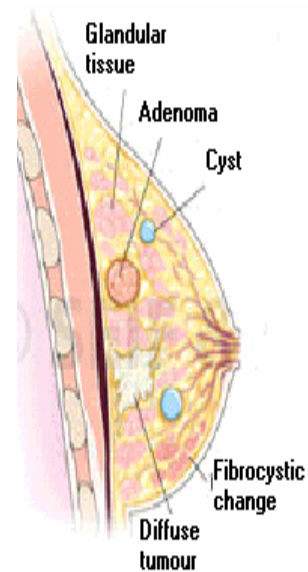
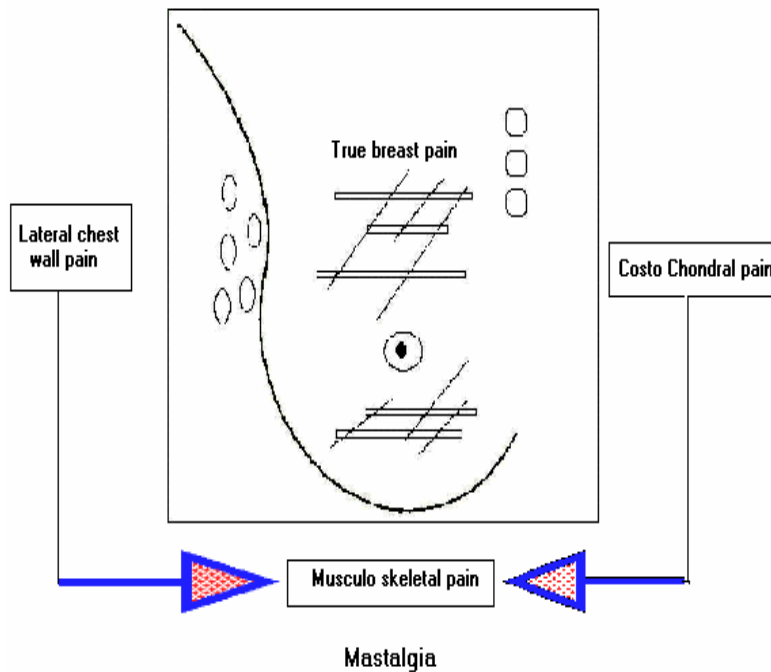
Acute pelvic pain	
<u>Genital:</u>	
Complications of pregnancy	• Ectopic pregnancy, ruptured or unruptured • Abortion
Degenerating fibroid	
Acute infection	• Endometritis • Acute pelvic inflammatory disease • Tubo-ovarian abscess • Pelvic thrombophlebitis • Ovarian vein thrombosis
Adnexal mass	• Corpus luteum hematoma • Ovarian torsion • Ruptured ovarian cyst • Paratubal cyst • Endometriosis • Ovarian hyperstimulation syndrome
<u>Extragenital:</u>	
Gastrointestinal	• Gastroenteritis • Appendicitis • Bowel obstruction • Diverticulitis • Inflammatory bowel disease • Irritable bowel syndrome • Mesenteric ischemia
Urologic	• Cystitis • Acute pyelonephritis • Ureteric calculus
Abdominal wall	• Hematoma • Strangulated or incarcerated hernia
Miscellaneous	• Acute porphyria • Pelvic thrombophlebitis • Aneurysm • Abdominal angina

Chronic pelvic pain	
<u>Genital:</u>	
Uterine	•Adenomyosis •Chronic endometritis •Fibroids •Intrauterine device •Pelvic congestion •Pelvic support defects •Polyps
Extrauterine	•Adhesions •Chronic ectopic pregnancy •Chronic pelvic inflammatory disease •Endometriosis •Ovarian remnant syndrome
<u>Extragenital:</u>	
Urologic	•Chronic urinary tract infection •Overactive bladder •Interstitial cystitis •Bladder stones •Suburethral diverticulitis •Urethral syndrome •Trigonitis
Gastrointestinal	•Constipation (very common in elderly persons) •Diverticular disease •Inflammatory bowel disease •Enterocolitis •Irritable bowel syndrome •Neoplasia •Chronic appendicitis •Cholelithiasis
Musculoskeletal	•Coccydynia •Disk problems •Degenerative joint disease •Fibromyositis •Hernia •Herpes zoster •Lower back pain •Levator ani syndrome (pelvic floor spasm) •Myofascial pain •Nerve entrapment syndromes •Osteoporosis •Posture-related pain •Scoliosis, lordosis, kyphosis •Strains, sprains
Others	•Physical or sexual abuse, prior or current •Lead or mercury toxicity •Hyperparathyroidism •Porphyria •Somatization disorders •Substance abuse, ie, cocaine •Sickle cell disease •Sympathetic dystrophy •Tabes dorsalis

B) Dyspareunia:

1. Atrophic vaginitis
2. Chemical vaginitis
3. Lichen sclerosis
4. Candida vulvovaginitis
5. Trichomonas vaginitis
6. Acute or chronic PID
7. Endometriosis
8. Fibroids
9. Adenomyosis
10. Congenital abnormalities of vagina (e.g. septate vagina)
11. Retroverted, retroflexed uterus
12. Ovarian cysts/tumours
13. Psychological trauma
14. Vaginismus
15. Vulvodynia

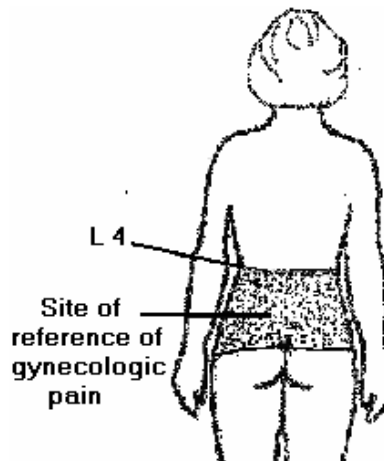
C) Mastalgia (breast pain):



Classification and description of mastalgia	
<u>True breast pain:</u>	
• <u>Cyclical:</u>	• Pronounced pattern; pain experienced around luteal phase of menstrual cycle; associated with ovulatory cycles • More common in pre-menopausal women • Often bilateral • Often described as sharp, shooting, stabbing; heaviness, aching, deep tenderness, throbbing. • It is thought that women with cyclical breast pain have breast tissue which is more sensitive than usual to the normal hormone changes which occur each month. It is not due to any hormone disease, or to any problem in the breast itself
• <u>Non cyclical:</u>	• No pattern (no association with menstrual events) • More common in women over 40 • Pain may be in just one breast, and tends to be well-localized; often sub-areolar or medial; may be bilateral • Often described as heavy, aching, tender, fearful, burning, pulling, stabbing, pinching. • Often no cause can be identified for this type of breast pain. In some cases it can be caused by benign breast changes such as cysts, fibroadenomas, and age- related changes in the milk ducts under the nipple or due to trauma and resulting haematoma. Infection is sometimes responsible, particularly during times of breast feeding
<u>Musculoskeletal:</u>	• No pattern • Occur at any age • Almost always unilateral • Consider costochondritis (Tietze's syndrome), musculo-skeletal origin, surgical trauma, referred pain.

D) Low backache:

Differential diagnosis of Low backache:



	Causes	Description
<u>Gynecological causes:</u> less frequent	• Uterine reteroersion • Prolapse (uterine). • Chronic cervicitis • Endometriosis • Pelvic tumors • Pelvic congestion • Uterine polyp. • Osteoporosis	• Always diffuse. • Midline or bilateral. • Sacral, lumbosacral and never high than L4.
<u>Non gynecological causes:</u> most frequent	• Ligamentary. • Muscular. • Bones and joints lesion. • Vascular • Neurological lesions • Referred (renal, rectal). • Psychological. • Metabolic.	• Back ache which can be pointed with a finger tip $\pm$ local tenderness is not due to intrapelvic lesion.

E) Vaginal / pelvic pressure or fullness:

Vaginal / pelvic pressure or fullness are usually encountered with pelvic relaxation and genital descent (urethrocele, cystocele, rectocele, entrocele and uterine descent). Other symptoms include low back pain, difficulty in initiating defecation or micturition and stress urinary incontinence.

F) Pruritus vulvae:

<u>Acute vulvar pruritis</u>	
A) Infectious causes:	• <u>Bacterial:</u> Staphylococcus aureus, group A Streptococcus, Mycoplasma homini, Haemophilus influenzae, Strept. pneumoniae; Neisseria meningitidis, Shigella, Gardnerella vaginalis, Mobiluncus, Bacteroides, Neisseria gonorrhoeae, Chlamydia trachomatis • <u>Fungal:</u> Candidiasis, Tinea cruris • <u>Parasitic infestation:</u> Trichomonas vaginalis, Scabies, Pediculosis pubis, Pinworms • <u>Viral:</u> Herpes simplex virus, Herpes zoster, Human papillomavirus, Molluscum contagiosum
B) Non-infectious causes:	• Contact dermatitis • Irritant dermatitis • Allergic

<u>Chronic vulvar pruritis</u>	
A) Malignancies:	• Extramammary Paget's disease, Vulvar intraepithelial neoplasia
B) Dermatoses:	• Seborrheic dermatitis, Psoriasis, Atopic dermatitis, Lichen sclerosus, Lichen planus
C) Atrophic vulvovaginitis:	
D) psychogenic:	• Depression
E) General:	• Diabetic patient • Obese patient • Inadequate hygiene • Deficiency states especially vitamins (A & B2, B12); iron and folic acid • Lymphoma • Jaundice • Uremia and other toxic states.
E) Idiopathic:	No cause found

Amenorrhea

Differential diagnosis of amenorrhea	
<u>Hypothalamic related:</u>	A. <u>Dysfunctional:</u> Stress, Exercise, Nutrition-related (a. weight loss, diet, malnutrition b. eating disorders as anorexia nervosa, bulimia), Pseudocyesis B. <u>Other disorders:</u> 1 Isolated gonadotropin deficiency a. Kallmann syndrome b. Idiopathic hypogonadotropic hypogonadism 2 Infection 3 Chronic debilitating disease 4 Tumors 5 Drugs
<u>Pituitary related:</u>	A. Hypopituitarism B. Tumor (Prolactinomas & Other hormone-secreting pituitary tumor) C. Infiltration D. Infarct
<u>Ovary related:</u>	A. Gonadal dysgenesis B. Gonadal agenesis C. Enzymatic deficiency D. Premature ovarian failure E. Resistant ovary
<u>Outflow tract related:</u>	A. Mu"llerian agenesis B. Testicular feminization C. Asherman syndrome D. Imperforate hymen E. Transverse vaginal septum F. Cervical agenesis—isolated G. Cervical stenosis, iatrogenic H. Vaginal agenesis—isolated I. Endometrial hypoplasia or aplasia—congenital
<u>Androgen excess:</u>	A. Polycystic ovarian syndrome B. Adrenal tumor C. Adrenal hyperplasia D. Ovarian tumor
<u>Other endocrine causes:</u>	A. Thyroid disease B. Cushing syndrome C. Diabetes

History and physical examination findings associated with amenorrhea

Findings	Associations
<u>Patient history:</u> ▪ Exercise, weight loss, current or previous chronic illness, illicit drug use ▪ Menarche and menstrual history ▪ Prescription drug use ▪ Previous central nervous system chemotherapy or radiation ▪ Previous pelvic radiation ▪ Psychosocial stressors; nutritional and exercise history ▪ Sexual activity	▪ Hypothalamic amenorrhea ▪ Primary versus secondary amenorrhea ▪ Multiple, depending on medication ▪ Hypothalamic amenorrhea ▪ Premature ovarian failure ▪ Anorexia or bulimia nervosa ▪ Pregnancy
<u>Family history:</u> ▪ Genetic defects ▪ Pubic hair pattern ▪ Infertility ▪ Menarche and menstrual history (mother and sisters) ▪ Pubertal history (e.g., growth delay)	▪ Multiple causes of primary amenorrhea ▪ Androgen insensitivity syndrome ▪ Multiple ▪ Constitutional delay of growth and puberty ▪ Constitutional delay of growth and puberty
<u>Review of systems:</u> ▪ Anosmia ▪ Cyclic abdominal pain; breast changes ▪ Galactorrhea; headache and visual disturbances ▪ Hirsutism or acne ▪ Signs and symptoms of hypothyroidism or hyperthyroidism ▪ Vasomotor symptoms	▪ Kallmann syndrome ▪ Outflow tract obstruction or müllerian agenesis ▪ Pituitary tumor ▪ Polycystic ovary syndrome ▪ Thyroid disease ▪ Premature ovarian failure
<u>Physical examination:</u> ▪ Anthropomorphic measurements; growth chart ▪ Body mass index ▪ Dysmorphic features (e.g., webbed neck, short stature, widely spaced nipples) ▪ Rudimentary or absent uterus; pubic hair ▪ Striae, buffalo hump, significant central obesity, easy bruising, hypertension, or proximal muscle weakness ▪ Tanner staging ▪ Thyroid examination ▪ Transverse vaginal septum; imperforate hymen ▪ Undescended testes; external genital appearance; pubic hair ▪ Virilization; clitoral hypertrophy	▪ Constitutional delay of growth and puberty ▪ Polycystic ovary syndrome ▪ Turner's syndrome ▪ Müllerian agenesis ▪ Cushing's disease ▪ Primary versus secondary amenorrhea ▪ Thyroid disease ▪ Outflow tract obstruction ▪ Androgen insensitivity syndrome ▪ Androgen-secreting tumor

Hypomenorrhea

Hypomenorrhea means scanty regular menstrual bleeding of less than 2 days duration.

The following causes are to be considered:

- 1- **Constitutional:** due to relative insensitivity of the endometrial vascular apparatus
- 2- **Psychological factors:** may fail to suppress the menstrual cycles completely, but only results in reducing the amount of flow.
- 3- **Uterine:** due to uterine hypoplasia, intrauterine adhesions, chronic tuberculous endometritis and following myomectomy or other plastic operations on the uterus.
- 4- **Endocrinological disturbance:** hypomenorrhea is commonly seen as a forerunner to amenorrhea and is also commonly associated with oligomenorrhea. It can occur with long term use of oral contraceptive pills.

Oligomenorrhea

Oligomenorrhea means infrequent menstruation . It is arbitrarily defined as one in which the cycle lasts longer than 35 days. Menstruation may be either regularly infrequent or irregularly infrequent. In either case , it is caused by ovarian dysfunction and so the symptom is more significant than hypomenorrhea . The causes are also essentially identical to those of amenorrhea.

- 1- **Constitutional:** This is especially common following menarche and preceding the menopause. Adolescent oligomenorrhea tends to cure itself within a few years but may persist until the first pregnancy, after which it is often replaced by a more regular normal cycle.
- 2- **Hormonal:** due to ovarian dysfunction and commonly secondary to hypothalamic, pituitary, thyroid or adrenal dysfunction and so the patient usually has other stigmas of endocrine upsets such as obesity and hirsutism.
- 3- **Chromosomal:** an underlying sex chromosome abnormality such as triple X syndrome is occasionally found.

Abnormal vaginal bleeding

Differential diagnosis of abnormal uterine bleeding	
<u>Complications of pregnancy:</u>	▪ Intrauterine pregnancy ▪ Ectopic pregnancy ▪ Spontaneous abortion ▪ Gestational trophoblastic disease ▪ Placenta previa ▪ Abruptio placentae
<u>Infection:</u>	▪ Cervicitis ▪ Endometritis ▪ Myometritis ▪ Salpingitis
<u>Trauma:</u>	▪ Laceration, abrasion ▪ Foreign body ▪ Sexual abuse or assault
<u>Premalignant & malignant neoplasm:</u>	Premalignant lesions: ▪ Cervical dysplasia ▪ Endometrial hyperplasia Malignant lesions: ▪ Cervical squamous cell carcinoma ▪ Endometrial adenocarcinoma ▪ Estrogen-producing ovarian tumors ▪ Testosterone-producing ovarian tumors ▪ Leiomyosarcoma
<u>Benign pelvic pathology:</u>	▪ Cervical polyp ▪ Endometrial polyp ▪ Leiomyoma ▪ Adenomyosis
<u>Systemic disease:</u>	▪ Hepatic disease ▪ Renal disease ▪ Coagulopathy ▪ Thrombocytopenia ▪ von Willebrand's disease ▪ Leukemia ▪ Anovulatory cycles ▪ Hypothyroidism ▪ Hyperprolactinemia ▪ Cushing's disease ▪ Polycystic ovarian syndrome ▪ Adrenal dysfunction/tumor ▪ Stress (emotional, excessive exercise)
<u>Medications/iatrogenic:</u>	▪ Intrauterine device ▪ Hormones (oral contraceptives, estrogen, progesterone) ▪ Anticoagulants ▪ Antipsychotics ▪ Tamoxifen ▪ Thyroid hormone replacement ▪ Corticosteroids
<u>Dysfunctional uterine bleeding:</u>	(diagnosis of exclusion)

Evaluation of abnormal uterine bleeding

Diagnostic step	Symptoms& signs	Conditions
<u>History:</u>		
	Pelvic pain	Miscarriage, ectopic pregnancy, PID, trauma, sexual assault
	Nausea, weight gain, urinary frequency, fatigue	Pregnancy
	Weight gain, cold intolerance, constipation, fatigue	Hypothyroidism
	Weight loss, sweating, palpitations	Hyperthyroidism
	Easy bruising, tendency to bleed	Coagulopathy
	Jaundice, history of hepatitis	Liver disease
	Hirsutism, acne, acanthosis nigricans, obesity	Polycystic ovary syndrome
	Postcoital bleeding	Cervical dysplasia, endocervical polyps
	Galactorrhea, headache, visual-field disturbance	Pituitary adenoma
	Weight loss, excessive exercise, stress	Hypothalamic suppression
<u>Physical examination:</u>		
	Goitre, weight gain, edema	Hypothyroidism
	Thyroid tenderness, tachycardia, weight loss, velvety skin	Hyperthyroidism
	Bruising, jaundice, hepatomegaly	Liver disease
	Enlarged uterus	Pregnancy, leiomyoma, uterine cancer
	Firm, fixed uterus	Uterine cancer
	Adnexal mass	Ovarian tumor, ectopic pregnancy, cyst
	Uterine tenderness, cervical motion tenderness	PID, endometritis

Common causes of bleeding according to age group

Adolescent	• Anovulatory • Exogenous hormone use • Coagulopathy
Reproductive	• Pregnancy complication • Anovulatory • Exogenous hormone use • Fibroids • Cervical and endometrial polyp • Thyroid dysfunction
Premenopause	• Anovulatory • Fibroid • Cervical and endometrial polyp • Thyroid dysfunction
Post menopausal	• Endometrial cancer until proven otherwise • Other endometrial lesion • Exogenous hormone use • Atrophic vaginitis • Other tumour (vulvar, vaginal, cervix)

DISCHARGE

VAGINAL DISCHARGE

1- Normal (physiologic) discharge

2- Lower genital infections:

	Monilial vaginitis	Gonorrhea & Chlamydia Cervicitis	Trichomonal vaginitis	HSV Cervicitis	Bacterial vaginosis	Chemically induced vaginitis	Atrophic vaginitis	Normal discharge
Discharge colour	White	Yellow or green	Yellow or gray	Translucent	white or gray	white to Yellow	Whitish, may be blood tinged	White to clear, flocculent
Discharge consistenc	Thick, curd like "cottage cheese"-like	Leukorrhea	Frothy	Watery	Thin Homogeneous	Leukorrhea	Thin	Stringy
Discharge amount	Variable often copious	Moderate	Variable but often copious if advanced	Scanty to copious	Scanty to Moderate	Scanty to copious	Scanty	Scanty to copious
Discharge pH	3.8–4.2	< 4.5	6–7	Not diagnostic	> 4.5	Not diagnostic	5.5–7	3.8–4.2
Associated symptoms	Vulvovaginal itching and irritation	Pelvic pain, dysuria, irregular bleeding, dysmenorrhea	Vulvar itching, dyspareunia, dysuria, pelvic/ low abdominal pain	Vulvar itching or burning in a discrete area that recurs along a dermatome	Amine "fishy" odor is common, 50% are asymptomatic	May or may not be malodorous, Vulvovaginal burning	Dysuria, urine frequency, urgency or urge incontinence,	Absence of foul odor
Associated signs	Mild to severe erythematous, dry vaginal wall	Cervicitis endometritis	Cervical petichiae "strawberry cervix"			Vulvovaginal inflammation	Thin, pale to erythematous vaginal mucosa	Pink vaginal walls and introitus

3- Pelvic inflammatory disease

4- Neoplasms of the genital tract:

- Vaginal intraepithelial neoplasia (VAIN)
- Vaginal squamous cell cancer
- Invasive cervical cancer
- Fallopian tube cancer

5- Others:

- Allergic/irritative vaginitis
- Foreign body
- Fistulous communications: with the urinary tract and rectum
- Intermittent emptying of hydrosalpinx

The diagnosis of vaginal discharge is based on a history, Physical exam, and a few simple diagnostic tests.

History:

Ask the patient about amount, odor, color & Consistency of discharge, itching, painful intercourse, or spotting after intercourse.

- Color (translucent, white, greenish, yellowish, brownish, blood-tinged)
- Amount (copious, moderate, scant)
- Consistency (frothy, watery, homogenous, curd-like, thin, leukorrhea)
- Smell (fishy, malodorous, normal)

REMEMBER:

- Moniliasis causes intense itching with a cheesy, dry discharge.
- Bacterial vaginosis causes a foul-smelling, thin white discharge.
- Trichomonas gives irritation and frothy yellow or gray discharge.
- Foreign body (lost tampon) causes a foul-smelling black discharge.
- Cervicitis causes a nondescript discharge with deep dyspareunia
- Chlamydia may cause a purulent vaginal discharge, post-coital spotting, and deep dyspareunia.
- Gonorrhea may cause a purulent vaginal discharge and deep dyspareunia.
- Cervical ectropion causes a mucous, asymptomatic discharge.

Physical examination:

Inspect carefully to verify the amount and character of the discharge and for the presence of lesions, foreign bodies and odor. Palpate to determine cervical tenderness.

Laboratory: You may test the vaginal discharge in any of 4 different ways:

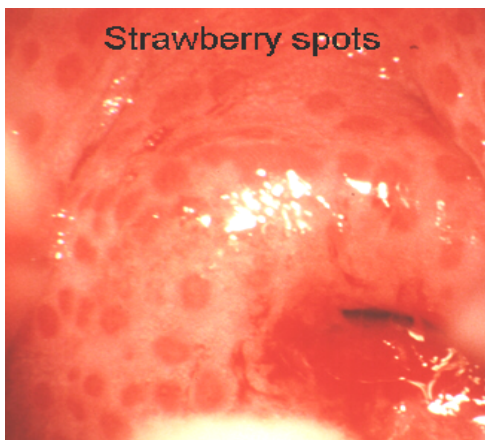
- Test the pH. If >5.0 , this suggests bacterial vaginosis
- Mix one drop of KOH with some of the discharge on a microscope slide. The release of a bad-smelling odor confirms bacterial vaginosis.
- Examine the KOH preparation under the microscope ("Wet Mount"). Multiple strands of thread-like hyphae confirm the presence of moniliasis.
- Mix one drop of saline with some discharge ("Wet Mount"). Under the microscope, large (bigger than WBCs), moving micro-organisms with four flagella are trichomonads. Vaginal epithelial cells studded with coccoid bacteria are "clue cells" signifying bacterial vaginosis.



Bacterial vaginosis



Candia infection with whit patches on vulva



Trichomonas vaginitis (strawberry cx)



Trichomonas frothy discharge



Monilia discharge



Cervicitis (mucopurulent discharge)

NIPPLE DISCHARGE

Nipple discharge is the release of fluid from the nipple.

Nipple discharge may be:

- **Spontaneous** (fluid leaks from the breast without any squeezing of the nipple or pressure on the breast); or
- **On expression** (fluid only comes out of the nipple when the nipple is squeezed or there is pressure on the breast).

Description of nipple discharge:

- Unilateral or bilateral
- Single or multiple ducts
- Colour and nature
- Blood-stained or not



Expression of nipple discharge by squeezing

- Spontaneous or expressed

I- **Milky nipple discharge (Galactorrhea)**: is continuous milky discharge in the absence of recent pregnancy. It is characterized by:

- Bilateral, multi-duct, milky discharge
- Often copious volumes, comes out of the nipple when the nipple is squeezed or there is pressure on the breast but can occur spontaneously
- It may be associated with amenorrhea.



Multiduct milky discharge

Causes:

1. **Chronic nipple stimulation.**
2. **Chronic emotional stress.**
3. **Tumours of the pituitary gland:**

i) **Prolactinomas:**

- Chiari-Frommel syndrome.
- Del-Castillo syndrome.
- Forbes-Albright syndrome.

In these syndromes there is hyperprolactinaemia, amenorrhea, Galactorrhea and superinvolution of the uterus with antecedent pregnancy in the 1st and without antecedent pregnancy in the 2nd. In both there is no demonstrable microadenoma of the pituitary and hyperplasia is suggested. In the 3rd, microadenoma of the pituitary is demonstrable.

ii) **Other adenomas:**

- Acromegaly.

- Cushing's disease.
- Empty sella syndrome.
- 4. **Drugs:** as with oral contraceptive pills (OC's), chlorpromazine, anesthetics, tricyclic antidepressants, etc.
- 5. **Other conditions associated with hyperprolactinaemia:**
 - Hypothyroidism.
 - Chronic renal failure
 - Ectopic production of prolactin by malignant tumours especially in the lung (bronchogenic carcinoma) and the kidney (hypernephroma) and even with uterine leiomyomas.

It is important to establish that the discharge is milky either by its characteristic color or by staining with iodine or methylene blue to confirm the presence of fat globules. Once galactorrhea is established, a prolactin and TSH levels should be assessed. Prolactin levels over 100 ng/ml. should initiate a search for pituitary lesions.

II- Serous, serousanguinous and bloody nipple discharge:

1. Nipple cracks and fissures.
2. Aberrations of normal development and involution (ANDI) especially fibrocystic breast disease and epithelial hyperplasia.
3. Mammary duct ectasia and intraductal papilloma.
4. Benign or malignant breast tumours.

In these conditions, thorough examination, and a mammogram should be done to rule out malignancy.

REMEMBER:

<i>If the nipple discharge is ...</i>	<i>It might be caused by ...</i>
• Clear, yellow, white or dark green • Clear, straw-colored • Thin, milky • Bloody • Pus • Milky or clear, possibly yellow or green • Clear, yellow or bloody • Yellow, green, brown or black	- Normal (physiological) breast function - Early pregnancy - Pregnancy or breast-feeding - Intraductal papilloma and breast cancer - Breast infection - Galactorrhea - An injury - Duct ectasia and fibrocystic breast changes

Vulval swellings

Arising from vulval structures (true)	Location	Characteristics
I- Cystic lesions		
1. Bartholin's duct cyst	Vestibule (between the upper 2/3 and lower 1/3 of the labia majora)	Usually unilateral; rarely exceeds the size of Hen's egg, commonly painless and fluctuant
2. Epidermal inclusion cyst	Fourchette (usually)	Benign, mobile, non tender; rarely larger than a pea .
3. Mucous cyst of the vestibule	Labia minora, vestibule, periclitoral area	Soft, less than 2 cm in diameter, smooth surface, superficial location; solitary or multiple; usually asymptomatic
4. Skene's duct cyst	Adjacent to urethral meatus in vestibule	Benign, asymptomatic; if large, may cause urethral obstruction and urinary retention
5. Clitoridal and hymenal cysts		
6. Sebaceous cysts		tiny and multiple and rarely exceed or grape in size
7. Varicosities	Labia majora	Soft, compressible, had a feeling of a "bag of worms" on palpation, unilateral or bilateral
II- Solid lesions		
1.Lentigo, nevus	Labia majora, labia minora	Lentigo generally appear as small (<5 mm) macules
2.Fibroma	Labia majora, perineal body, introitus	Firm, asymptomatic; may develop pedicle; may undergo myxomatous degeneration; potential for malignancy
3.Lipoma	Labia majora, clitoris	Benign, slow-growing; sessile or pedunculated
4.Leiomyoma	Labia majora	Rare; solitary, firm; arises from smooth muscle
5.Fibroepithelial polyp	Labia majora	Benign, fleshy, variable size; usually pedunculated but may be sessile; polypoid in appearance
6.Neurofibroma	Multicentric	Small, fleshy; polypoid in appearance; multiple; associated with von Recklinghausen's disease
7.Hidradenoma papilliferum	Between labia majora and labia minora	Benign, slow-growing, small nodule (2 mm to 3 cm); arises from apocrine sweat glands
8.Inflammatory swellings		either due to edema and suppuration (e.g acute vulvitis, Bartholinitis and Bartholin abscess, skenitis and paraurethral abscesses) or due to the resultant hypertrophic lesions (e.g papillomatous, condylomatous and granulomatous formations)
9.Granulomatous lesions of the vulva		Tuberculous hypertrophic lesions Bilharzial vulval lesions LGV infection Chronic pyogenic infections
10. Squamous cell carcinoma	Multicentric	Related to benign epithelial disease in older women and to HPV infection in young women

Swellings not related to vulval structures but appear at the vulva

<u>Origin of the swelling:</u>	
Inguinal:	1. Hernia 2. Hydrocele of the canal of Nuck: Soft, compressible; peritoneum entrapped within round ligament; may mimic inguinal hernia. It is located high in the labia majora 3. Round ligament varicocele 4. Round ligament tumours.
Urethral:	1. Urethrocele 2. True urethral granalomatous caruncle: small red fleshy swelling composed of granulomatous tissue presenting at the posterior lip of the external meatus 3. Urethral diverticulum 4. Urethral papillomas and carcinoma
Vaginal:	1. Vaginal wall prolapse (cystocele, rectocele) 2. Primary or secondary vault prolapse 3. Vaginal cysts (Gartner's)
Cervical:	1. Congenital elongation of the portiovaginalis 2. Cervical fibroid polypi
Uterine:	1. Second and third degree uterine prolapse 2. Corporeal fibroid polypi 3. Chronic inversion of the uterus
Ectopic:	1. Endometriotic deposits 2. Accessory nipple or breast

Swellings of the vulva are anatomically either truly vulval related to the various structures of the vulva, or due to genital displacements and other genital lesions presenting at the vulva or even arising from a distant site (e.g the breast).

Etiologically they are either congenital, traumatic, vascular, inflammatory or neoplastic. Also, vulval swellings can be classified into cystic or solid. Cystic swellings are almost always benign and commonly painless and the complaint may be just the finding of a lump. In solid swelling, vulvar biopsy is often essential to distinguish benign from premalignant or malignant lesions. This is true unless the nature of the swelling is characteristically evident by clinical examination e.g vulvar varicosities.



Bilateral cysts of canal of Nuck and vaginal prolapse



Unilateral cyst of canal of Nuck



folliculitis



Bartholin cyst



Vulval Varicositis



Genital schistosomiasis

Endometriotic deposit



Vulvar papillomatosis



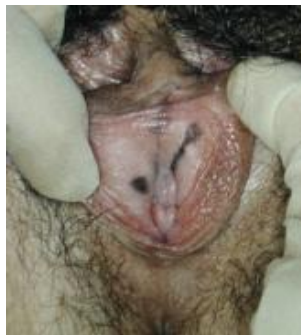
Labial hypertrophy



Vulvar Hemangioma



Epidermal inclusion cyst



Vulvar melanosis



Vulvar Fibroma



Vulvar lipoma



Hidradenoma



Third degree uterine descent



Vulvar haematoma



Hidradenitis suppurativa



Condyloma



Elephantiasis (filariasis)



Vulvar oedema



Cystocele



Urethral Diverticulum



Paraurethral cyst



Clitoral hypertrophy

Vaginal swellings

causes	Description
<u>Vaginal wall causes:</u>	
a) <u>Vaginal cysts:</u> 1. Gartner's cysts: 2. Epidermoid or implantation dermoid cysts: 3. Endometriotic cysts:	▪ Are frequently small and multiple but can be single and large. It appears along a line running down the anterolateral wall of the vagina from the cervix to the region of the urethra and clitoris. It does not disappear with pressure and does not communicate with the bladder or urethra. ▪ The commonest site is the lower part of the posterior vaginal wall. ▪ Commonly arise in the posterior vaginal fornix in association with endometriosis of the recto-vaginal septum or in vaginal scars
b) <u>Benign vaginal neoplasm</u> 1. Papillomas 2. Adenomas 3. Fibromas and lipomas 4. Myxoid tumours 5. Granulomatosis	▪ True papillomas due to HPV infection or mostly it represents skin tags the result of obstetrical injuries or operations. ▪ Often small and multiple ▪ Paravaginal rather than vaginal i.e arise from the outer coat of the vagina (paracolpos). They can reach large size and extend into the broad ligament ▪ Soft fluctuant tumours, commonly arise from ischiorectal fossa ▪ Appear as discrete polypoidal areas of granulation tissue. arise either in association with infections such as LGV and T.B., or in association with vaginal scars following colporrhaphy and total hysterectomy
c) <u>Malignant vaginal neoplasms:</u> 1. Primary 2. Secondary	▪ Squamous cell carcinoma; clear cell adenocarcinoma ▪ Mostly found in the lower part of the anterior vaginal wall
d) <u>Vaginal wall prolapse</u> e) <u>Vaginal varicosities</u>	
<u>Causes related to adjunct structures:</u>	
a. Urethral swellings b. Cervical hypertrophy c. Uterine prolapse d. Uterine inversion e. Extrusion of uterine polypi or tumours through the cervix. f. Retained fluid	▪ Commonly categorized with those of vulva ▪ Congenital or acquired ▪ Blood (hematocolpos) (ii) pus (pyocolpos) (iii) gas with vaginitis emphysematosa

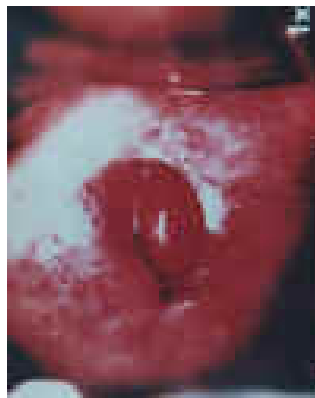
Cervical swellings

The causes of cervical swelling include the following:

- 1- Cervical hypertrophy congenital or associated with chronic congestion as in cases of prolapse and cervicitis.
- 2- Cervical mucus polypi and Nabothian cysts or follicles.
- 3- Hematocervix associated with atresia
- 4- Cervical endometriosis
- 5- Cervical pregnancy
- 6- Benign neoplasms as papilloma, leiomyoma and angioma
- 7- Malignant neoplasms as squamous cell carcinoma, adenocarcinoma, sarcoma and metastases.



Cervical carcinoma



Nabothian cysts



Cervical mucus polyp

Cervical

Pelvic and pelvi-abdominal swellings

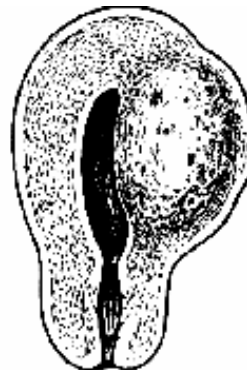
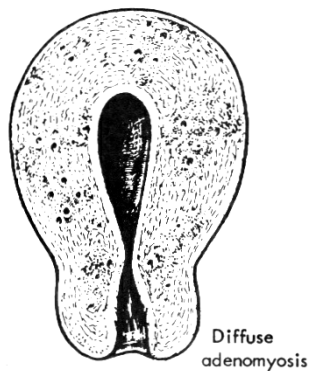
Pelvic masses may be genital in origin or arising from other structures (urinary tract, boweletc.). The gynecologic causes are either uterine, adnexal or ovarian.

Central pelvic or pelvi-abdominal mass

A. Uterine causes:

Uterine body enlargement is either symmetrical in which the uterus enlarges in a proportionate manner and so retains its shape or asymmetrically with irregular contour.

Symmetrical enlargement		Asymmetrical enlargement
1. Recent pregnancy:	Normal and abnormal is the commonest cause to be considered in the reproductive age group e.g retained products of conception , vesicular mole , acute hydramnios and delayed or incomplete involution.	1. Subserous single or multiple fibroids
2. Myohyperplasia:	Due to active or passive pelvic congestion	2. Congenital malformations of the uterus with accessory horn or bicornuate uterus
3. Adenomyosis:	the uterus is diffusely enlarged usually > 14 cm , often soft and tender.	3. Uterine sarcoma and mixed mesodermal tumours
4. Retained fluid:	Large hematometra due to cervical stenosis either congenital or acquired . In pyometra, the uterus is soft, tender and passage of uterine sound is less difficult compared with cases of hematometra and is followed by discharge of pus.	4. Metastatic growths
5. Benign uterine tumors:	Fibroids submucous and interstitial , adenomatous uterine polyp.	5. Localized adenomyosis
6. Malignant uterine tumors:	Endometrial carcinoma , choriocarcinoma and malignant uterine polyp (carcinomatous or sarcomatous).	6. Rarities such as cysts arising from Mullerian diverticulae, lymphoma



Localized adenomyosis

Uterine swellings are clinically central pelvic or pelvi-abdominal. The mass is mobile and its movement is transmitted to the cervix and vice versa. The swelling is continuous with the uterus (the uterus cannot be felt separate from the mass) and uterine sounding will show increase in the length of the cavity.

B. Full bladder: form central pelviabdominal cystic swelling.

C. Hard stool in the colon.

D. Hematocolpos: can present as a pelvi- abdominal swelling . In such case, the uterus may be felt as a small firm nodule on the top of the mass

E. Large hydronephrosis, encysted tuberculous peritonitis, pancreatic and mesenteric cysts: are mainly abdominal swellings characterized mostly by band or areas of resonance over the mass and cannot be pushed into the pelvis.

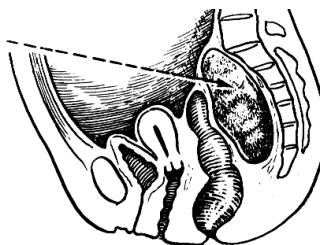
F. Retroperitoneal tumours: as fibroma or sarcomas are fixed and resonant on percussion due to overlying intestine.

Mass or swelling in Douglas pouch

<u>A) Mass in Douglas pouch itself:</u>	<u>B) Mass arising from the pelvic structures but felt through the Douglas pouch:</u>	
1- Pelvic haematocele.	1. <u>Uterine:</u>	a) Retroverted uterus: the commonest mass felt through the posterior vaginal fornix. b) Posterior wall fibroid.
2- Pelvic abscess.	2. <u>Tubal:</u>	a) Hydrosalpinx or pyosalpinx b) Tubal pregnancy
3- Endometriosis of pelvic peritoneum.	3. <u>Ovarian:</u>	a) Ovarian swellings b) Prolapsed ovary.
4- Encysted tuberculous mass.	4. <u>Rectal:</u>	a) Fecal mass b) Cancer of rectum c) Endometriosis of the rectovaginal septum
5- Metastatic nodules, specially from cancer of ovary.	5. <u>Retroperitoneal tumour:</u>	a) Fibroma & sarcoma b) Tumours of the sacrum as osteoma.



Pelvic haematocele



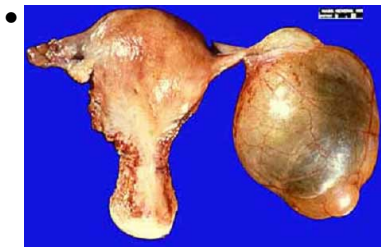
Retroperitoneal tumour

Cystic adnexal masses

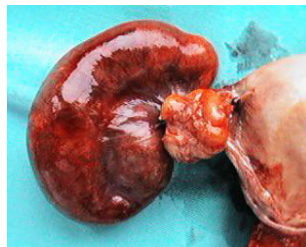
- a) Broad ligament paraovarian cyst
- b) Hydatids of Morgagni
- c) Hydrosalpinx

Adnexal (non-ovarian) cystic masses are rare . They are usually discovered incidentally on imaging studies and rarely produce symptoms.

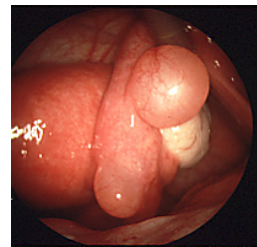
Both tubal structures (hydrosalpinx, hydatids) and congenital broad ligament cystic masses (paramesonephric remnants) can appear to be ovarian cysts if the ovary is not seen in imaging separately on that side.



Parovarian cyst



Hydrosalpinx

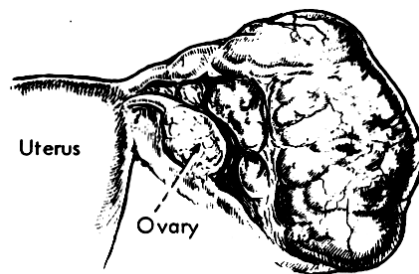


Hydatids of morgagni

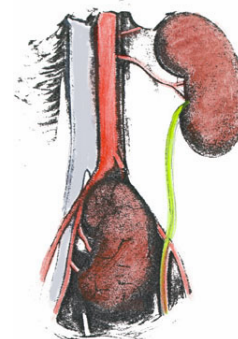
Solid adnexal masses

- a) Fallopian tube carcinoma
- b) Pelvic kidney
- c) Metastatic non gynecologic cancer
- d) Broad ligament hematoma

Solid, non-ovarian adnexal masses are rare. They are usually indistinguishable from solid ovarian masses. An IVP may help to rule out pelvic kidney and also to show the path of the ureter if surgery for diagnosis is planned.



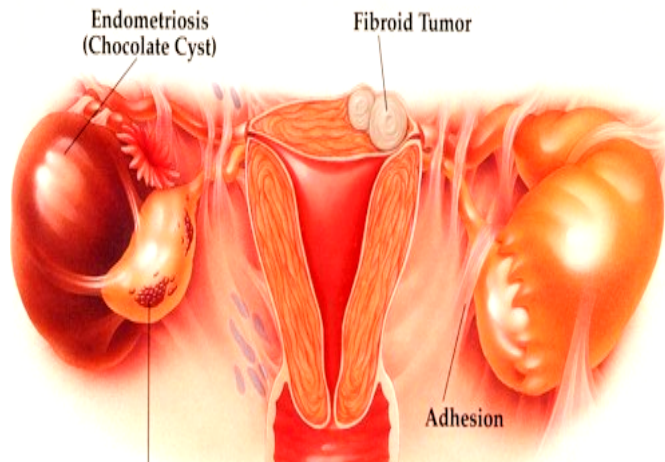
Fallopian tube carcinoma



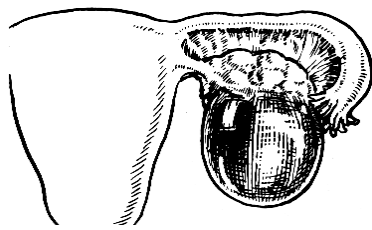
Pelvic kidney

Complex cystic/solid adnexal masses

- a) Infections (acute and chronic pelvic inflammatory disease) i.e parametritis, tuberculosis and actinomycosis
- b) Endometriosis with tuboovarian adhesions
- c) Bowel lesions such as appendiceal abscess , regional enteritis, diverticulitis and bowel adhesions to adnexa
- d) Hematosalpinx due to tubal pregnancy or torsion of a hydrosalpinx. **Endometriosis with adhesions(RT.)- PID (LT)**



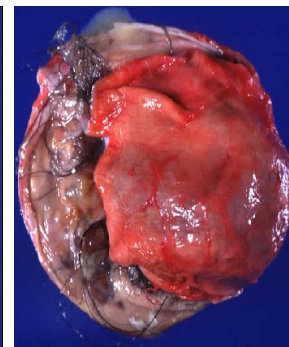
A complex adnexal mass usually means that the ovary cannot be distinctly identified. It is commonly a benign process involving the bowel, tube or adhesive disease around the ovary.



Corpus luteum cyst



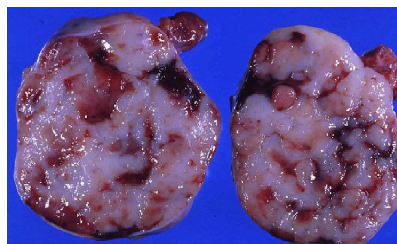
Mucinous cystadenoma



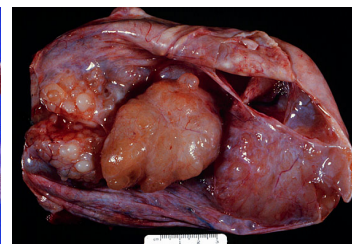
Benign cystic teratoma



Ovarian fibroma



Dysgerminoma



Mucinous cystadenocarcinoma

Ovarian swellings

A) <u>Mostly cystic</u>	1. Atretic follicular cysts and germinal inclusion cysts 2. Simple functional ovarian cysts 3. Ovarian endometrioma 4. Neoplastic cysts: Benign and malignant e.g serous & mucinous cystadenomas and cystadenocarcinoma
B) <u>Mostly solid</u>	1. Luteoma of pregnancy 2. Acute and chronic oophritis 3. Primary ovarian neoplasm: * Germ cell (malignant teratoma and dysgerminoma) * Stromal (fibroma, Brenner tumour, granulosa and theca cell tumours and Sertoli- Leydig sarcoma) * Epithelial (solid endometriod adenocarcinoma and serous adenofibroma) 4. Secondary or metastatic ovarian neoplasm
C) <u>Mixed cytic and solid</u>	1. Corpus luteum haematoma 2. Ovarian endometriosis 3. Ovarian pregnancy 4. Ovarian teratomas 5. Serous , mucinous and endometroid cyst adenocarcinoma

Inguinal lymphadenopathy

<u>Infectious:</u>	HSV Syphilis Chancroid Granuloma inguinale
<u>Malignant:</u>	Vulvar cancer Vaginal cancer Anal cancer Lymphoma

Infertility

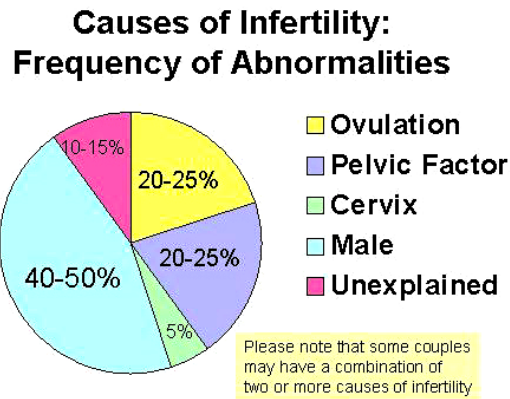
Infertility is encountered in approximately 15% of couples and can be either due to:

1- Male factor:

- Abnormal seminal picture as (azoospermia, oligospermia, athenospermia, ...etc.)
- Causes of improper sexual act (impotence, hypospadias, ...etc.)

2- Female factors:

- Ovulatory factor e.g. PCO and corpus luteum dysfunction
- Tubal factor e.g. tubal blockage and peritubal adhesions
- Uterine factor e.g. Asherman syndrome, T.B. endometritis and uterine malformations.
- Cervical factor e.g. cervical stenosis and abnormal cervical mucus
- Introital factor e.g. painful vulval lesions and severe vaginitis
- Peritoneal factor e.g. PID and endometriosis



N.B. Pelvic factor = tubal and peritoneal factors

3- Combined male and female factor

4- Unexplained infertility:

Infertility diagnosis (Work up) should examine each component of the steps required for conception which are adequate sexual contact ,frequency of intercourse , sperm penetration, tubal patency , ovulation and corpus luteum function. More than one factor can be responsible. During the work up, care is taken not to perform investigations that would interfere with pregnancy during that cycle. The diagnostic work up can take months due to the sequence of the test. All of these can cause psychological embarrassment and so, should be explained and planned for during infertility counseling.

Thorough history of the couple with special stress on the following:

- The type of infertility and duration of infertility
- The sexual activity pattern and the male sexual history
- Contributing factors as stress, nutrition, chemical exposure ,....etc. should be evaluated.
- The diagnostic evaluation to date

During the examination, exclude factors which contraindicate pregnancy and search for evidence of manifest endocrinopathies. Gross genital pathology should be excluded by systematic pelvic examination.

GENITAL ULCERATION

The diagnosis of the etiology of genital ulceration can be challenging. A variety of both infectious and noninfectious diseases are associated with genital ulceration. **The term genital ulcer** means the presence of one or more discrete interruptions of the mucosal or cutaneous surfaces involving the genitals, perineum, or surrounding tissues with the adjoining skin and mucous membranes being normal. The most common sexually transmitted infections that result in ulceration of the genitalia are syphilis, herpes simplex, chancroid, lymphogranuloma venereum, and granuloma inguinale.

Genital ulcers are generally divided into diseases that cause painful ulceration and those responsible for painless ulcers. Obtaining this information from the patient is clinically very valuable, as some of these diseases may resemble each other visually. Syphilis, lymphogranuloma venereum, and granuloma inguinale are usually associated with painless ulcers, whereas painful ulcers generally result from infections with herpes simplex and chancroid.

VULVAL ULCERS

Diagnostic approach:

a. History:

Duration and location of lesion(s); previous history of genital ulcers, syphilis, or genital herpes; associated symptoms (pain, pruritus, fever, etc.); medications and timing of ulcers relative to initiation of new medication; sexual history

b. Physical examination:

Dimensions and location of lesion(s); presence of pigmentation, edema, erythema, or induration; presence of associated exudate or tenderness; presence of oral lesions; associated lymphadenopathy or rash.

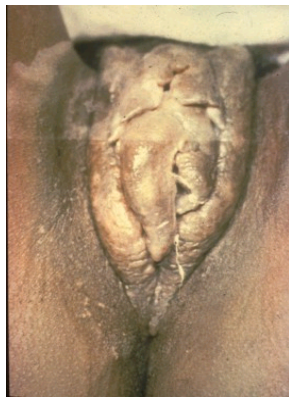
Remember:

- ❖ Ulcerating lesions of the vulva may be solitary or multiple and painful or non tender.
- ❖ Ulcers that arise from vesicles are typical of herpes simplex virus (HSV) infections.
- ❖ Solitary, non tender ulcers are characteristic of syphilis, LGV and neoplasia.
- ❖ Multiple painful ulcers occur in HSV, Behçet's syndrome, and Crohn's disease.
- ❖ Ulcers arising from papules are characteristic of:
 1. syphilis
 2. chancroid
 3. granuloma inguinale
 4. lymphogranuloma venereum.
 5. carcinoma
 6. Behcet's disease & crohn's disease

Vulval ulcers	Description of ulcer	Pain	lymphadenopathy
Infectious ulcers:			
• Herpes simplex	Multiple small grouped vesicles that coalesce and form superficial small shallow ulcers	Common	Usually present in primary infection and absent in recurrences
• Lymphogranuloma venerium	Usually superficial or deep single ulcer with elevated irregular edges	Rather painless	Unilateral, tender and may suppurate
• Granuloma inguinale	The ulcer is usually single chronic red ulcer with rolled edge	Painless	Regional LN are not involved in early stage and not suppurate.
• Syphilis	Chancre is single ulcer sharply defined with serpiginous edge. It is indurated with relatively clean base	Painless	Hard and shotty but painless and do not suppurate.
• Chancroid	Single or multiple with undermined irregular ragged edges	Common and severe	Usually unilateral and may suppurate
• Tuberculous ulcers	Shallow superficial ulcers with undermined edges.	Tender	
• Bilharzial ulcers	Chronic with surrounding induration which simulates malignancy		
Malignant ulcers:			
• Invasive sq. cell carcinoma	Eroding ulcer with everted edge. The floor is friable and bleeds on touch and the base is indurated and even fixed to the underlying tissues.	Painless	Usually present
• Basal cell carcinoma	Rodent ulcer with rolled in edge	Painless	Absent
Others:			
• Aphthous ulcers	Small painful ulcers with a yellow floor.	Less painful than herpetic	
• Chron's disease	knife cut and sometimes edematous, irregular with discharging sinuses.		
• Traumatic ulcers	History of traumatic injury Consider possibility of sexual violence	Painful	
• Behçet's Syndrome	Shallow or deep with a central yellowish necrotic base	Painful	



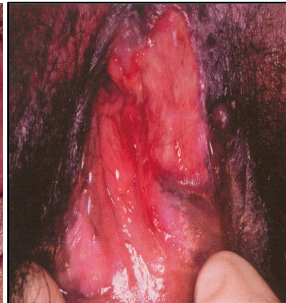
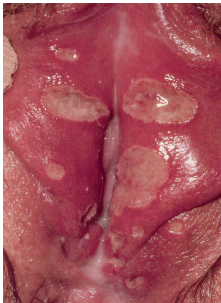
Herpes simplex ulcers



Syphilis (chancre)

LGV

Granuloma inguinale



Chancroid

Aphthous ulcer

Malignant vulval ulcer

VAGINAL ULCERS

1- Infectious ulcers:

Infectious ulcerative lesions of the vulva, commonly involve the lower part of the vagina especially those associated with sexually transmitted infections.

2- Traumatic:

Traumatic ulcers result from articles inserted in the vagina or following accidents, rape and child birth or due to burns caused by chemicals, radium, clumsy use of electrocautery or diathermy.

3- Trophic ulcers: accompany utero–vaginal prolapse.

4- Malignant ulcers:

occur in old age, usually in the posterior vaginal fornix. It usually takes the form of ulcer with raised edges and hard base which becomes fixed to the underlying structures at an early stage.

5- Idiopathic ulcers:

There are some isolated cases of troublesome chronic multifocal vaginal resistant ulceration, the cause of which is unknown.



TB ulcer posterior vaginal wall



Trophic ulcer of vagina

CERVICAL ULCERS



TB ulcer of the cervix



Malignant cervical ulcer



Trophic ulcer of the cervix

1- Infectious ulcers:

As with the vagina, the sexually transmitted infections such as herpes genitalis (HSV) and syphilis can cause ulcerative lesions of the portiovaginalis of the cervix, however, with some variable clinical presentations e.g. on the cervix the primary chancre may be mistaken for erosion and sometimes presents as a diffuse induration of the cervix. The herpetic lesions are frequently less painful (cervical involvement occurs in approximately 80% of primary infections) and in such case vaginal discharge is a frequent symptom.

Tuberculosis of the cervix is commonly a cauliflower growth rather than an ulcer.

2- Traumatic: less frequent in the cervix

3- Trophic ulcers:

4- Malignant ulcers: squamous cell carcinoma and adenocarcinoma can be ulcerative

White vulvar lesions

1. Skin diseases as vitiligo and Psoriasis
2. Vulvar lichenification (Lichen planus and Lichen sclerosis)
3. Condyloma accuminata
4. Diabetic vulvitis
5. Leukoplakia vulva
6. Paget's disease of vulva
7. In situ squamous cell carcinoma

White vulvar lesions most commonly occur in postmenopausal women. Many of the white lesions are produced by chronic irritation such as scratching or a chronic infectious process or chronic vulvar soiling with urine or feces. Vulvar carcinoma in situ can be present and also underlying malignancies, so biopsy should be performed very early.

Red vulvar lesions

1. Skin diseases as Psoriasis, Seborrheic dermatitis and Tinea cruris
2. Lichen planus
3. Contact irritant vulvitis
4. Candidiasis
5. Paget's disease
6. Vulval intraepithelial neoplasia
7. Invasive carcinoma

A red or a fleshy color lesion often results from an underlying inflammatory process and thus there is a slightly higher chance of malignancy in this group of lesions.

Initial treatment may be directed toward candidiasis or an irritant vulvitis with steroids but if there is no quick resolution, further studies will need to be performed usually including a vulvar biopsy.

Pigmented vulvar lesions

1. Seborrheic keratosis
2. Atypical condylomata
3. Nevus , melanosis and melanoma
4. In situ squamous cell carcinoma (VIN)

Pigmented lesions appearing bluish/brown or black raise a high index of suspicion for malignant melanoma of the vulvar skin. Lesions which have been present for most of the patient's reproductive life are unlikely to represent malignancies.

Biopsy is almost standard for this group of lesions with the exception of vulvar melanosis which is usually just a discolored area in the skin like a large freckle. If it is newly occurring it must be biopsied. If it is just newly discovered in a patient who had not been previously examined and the area is less than a centimeter and there is no elevated component to the lesion (it is entirely intradermal) then it may be observed over a short period of time without biopsy to make sure that it does not enlarge.

Abnormalities of development and secondary sex characters

- 1- Ambiguous external genitalia
- 2- Anomalous vulvovaginal examination
- 3- Breast disfigurement
- 4- Delayed sexual development and precocious puberty
- 5- Hirsutism

Ambiguous external genitalia

1. Congenital adrenal hyperplasia
2. Maternal exogenous androgen/ or progestin ingestion
3. Maternal androgen secreting tumors
4. True hermaphroditism
5. Intersexuality due to sex chromosome abnormalities

Initial diagnostic studies should be performed before pronouncing a gender assignment. Most often, ambiguous genitalia in female infants result from excessive androgen influence on the developing fetus. The diagnostic goals are to determine if there is an excess of any of the sex steroids. Not infrequently, chromosomal abnormalities are present which result in a neutral or mixed genital appearance of either a female or male infant.



Ambiguous genitalia

Anomalous vulvovaginal examination

- 1- Imperforate hymen
- 2- Vaginal atresia and vaginal septa (Transverse and longitudinal)
- 3- Cervical atresia
- 4- Mullerian aplasia
- 5- Incomplete mullerian fusion
- 6- Testicular feminization syndrome.

The primary goal is to accurately define what anomalies are present so that if surgical correction is needed, an exact plan can be developed.



Imperforate hymen

Usually imaging techniques such as magnetic resonance imaging (MRI) and ultrasound are needed. Ultimately, diagnostic surgery may be needed to define a defect precisely. Often genital defects are associated with urinary tract anomalies, so in the presence of one defect, others should also be looked for.

Breast anomalies

1. Marked asymmetry
2. Congenital polythelia / polymastia
3. Amastia/athelia
4. Nipple retraction
5. Hypoplasia
6. Macromastia (virginal hypertrophy and drug induced)
7. Breast atrophy
8. Breast ptosis and pseudoptosis post pregnancy



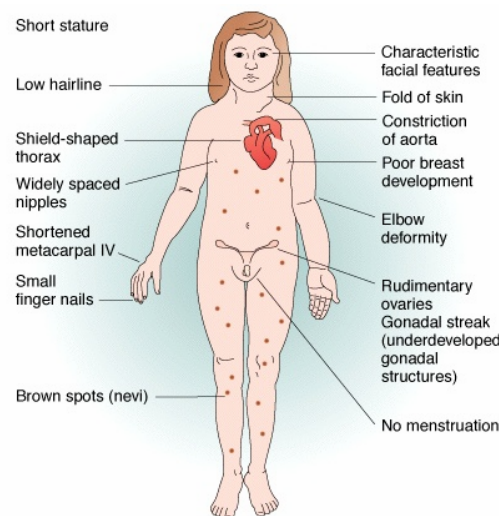
Nipple retraction

Breast hypertrophy at the time of the onset of a woman's menstrual periods and breast atrophy at cessation of a woman's menstrual periods during menopause, are the rule rather than the exception. While breast asymmetry is a quite common finding, asymmetry to the extent that it requires surgical therapy is unusual.

Delayed sexual development and precocious puberty

1) Delayed sexual development:

1. Hypopituitarism
2. Primary hypothyroidism
3. Congenital adrenal hyperplasia
4. Cushing's syndrome
5. Weight loss/anorexia and gastrointestinal malabsorption
6. Constitutional delay
7. Athletes
8. Gonadal dysgenesis 45 XO (Turner's syndrome), 46 XY (Swyer syndrome), 46 XX
9. Galactosemia
10. Chemotherapy/radiation
11. Resistant ovary syndrome



Turner's syndrome

Thorough history and physical evaluation along with a few endocrinological and other laboratory studies are usually indicated. Imaging studies such as MRI, are used to search for tumor or vascular lesions.

II) Precocious puberty:

A. Complete isosexual precocious puberty:

1) Constitutional idiopathic precocious puberty

2) CNS abnormalities:

- a) Tumor: craniopharyngioma ,optic glioma, suprasellar teratoma , hamartoma
- b) Infection: encephalitis and meningitis
- c) Neurofibromatosis (Von Recklinghausen's disease)
- d) Trauma

3) Primary hypothyroidism

4) Ectopic gonadotropin production:

- a) Ovarian choriocarcinoma and dysgerminoma
- b) Liver hepatoblastoma

Increased gonadotropins differentiates this category from pseudopuberty which is usually due to just estrogens or androgens. Gonadotropins (LH and FSH) are assessed. A normal, prepubertal girl would have low values. Any normal or high values indicates that the central nervous system (CNS) has been turned on for sexual growth development. Often this indicates a CNS lesion which can be serious. Thyroid studies and CNS imaging studies help to identify most of the causes except for the very rare ectopic sources of gonadotropins.

B. Incomplete isosexual precocious puberty:

- 1. McCune-Albright syndrome (Polyostotic dysplasia)
- 2. Ovarian tumors: granulosa-theca cell tumor, follicular and lutein cysts, arrhenoblastoma
- 3. Choriocarcinoma
- 4. Adrenocortical adenoma (feminizing)
- 5. Exogenous estrogens
- 6. Isolated premature thelarche (breast development)
- 7. Isolated premature pubarche (pubic hair development)

A careful history is essential in detecting exogenous ingestion of hormonal substances. Imaging studies help rule out ovarian or adrenal tumors. Idiopathic causes are only diagnosed after the more serious causes (tumors) or the easily treatable causes (exogenous hormones) are ruled out.

C. Heterosexual precocious puberty:

- 1) **Adrenal:** - Congenital adrenal hyperplasia - Adrenal tumor
- 2) **Ovarian:** - Polycystic ovarian syndrome - Ovarian tumor

3) Exogenous androgen ingestion

The primary diagnostic goal is to determine the presence and the source of the androgens. Very high levels are suspicious for tumors, either benign or rarely, malignant. Androgen containing medications should be carefully screened for.

Hirsutism

a) Hirsutism due to hyperandrogenism of adrenal origin:

1. Virilizing adenoma and adenocarcinoma
2. Corticoid-producing adenoma
3. Congenital adrenal hyperplasia
4. Cushing's disease
5. Adrenal hyperandrogenism (idiopathic)

An adrenal source of excess androgen is less common than an ovarian source. Dehydroepiandrosterone (DHEA) and its sulfate form, DHEA-S are the most common adrenal androgens measured to confirm an adrenal source. Once an adrenal source of excess androgen is determined, the primary goal is to first rule out a malignant or benign tumor of the adrenal gland.

b) Hirsutism due to hyperandrogenism of ovarian origin

1. Polycystic ovarian disease
2. Sertoli-Leydig cell tumor (arrhenoblastoma)
3. Granulosa-theca cell tumor
4. Lipoid cell tumor
5. Gynandroblastoma
6. Hilus cell tumor
7. Luteoma
8. Brenner tumor
9. Krukenberg tumor
10. Cystadenoma
11. Germ cell neoplasm (teratoma, dysgerminoma, gonadoblastoma)
12. Ovarian hyperthecosis

Serum testosterone levels are usually drawn as a marker for increased ovarian androgens. Ingested sources of testosterone or any androgenic substances should be ruled out. As with the adrenal source of excess androgen, a malignant or benign tumor of one or both ovaries is the first category to rule out. Non-tumor, ovarian sources can often be treated with medications to reduce the androgens and thus reduce hirsutism.

c) Hirsutism (mixed ovarian-adrenal hyperandrogenism):

1. Mixed ovarian-adrenal hyperandrogenism
2. Testicular source
3. Iatrogenic source

Rarely, women may have some testicular tissue as a result of a congenital birth defect. Ingested sources of androgenic substances is the more common cause of excess hair growth.

d) Hypertrichosis (non-androgenic excessive hair growth):

1. Familial or constitutional hypertrichosis
2. Increased androgen sensitivity in hair follicles (drug induced as with phenytoin, streptomycin and diazoxide)
3. Congenital porphyria
4. Malnutrition and Anorexia nervosa
5. Hypothyroidism (especially in children)
6. Dermatomyositis

Hypertrichosis refers to growth of non-sexual hair and is more generalized than hirsutism. The most common category of hypertrichosis is that of a familial tendency to excessive hair growth. Medication-induced hypertrichosis is the most important to correctly diagnose because it is the most treatable.